Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 80 A 720 LS 425 RQV 300-1000 PA 577-2

Komb.-Nr. 9 400 087 323

supersedes-

company: Caterpillar

engine: 3306 NA
91,9 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,0+0,1	9,7-9,8	0,25(0,4)			
300	6,8-7,0	0,9-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 16	200	min.11,0	325	0,5-2,0
							300	6,4-6,6	400	2,7-3,1
ca. 69	11,0	1020-1030					490-550=2,0		500	3,5-4,2
	4,0	1090-1120							800	6,1-6,6
	1180	0-1,0				220-370 (3a)			1010	8,5

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
990	97,0-98,0 (95,5-99,5)	1020-1030*	500	101,0-103,0 (100,0-104,0	100	152,0-172,0	990	12,0+0,1
							500	12,7+0,1
			700	103,0-105,0 (102,0-106,0			700	12,5+0,2
							850	12,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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A1

A4

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 CAT 7,0 a 1

1. Edition

En

PES 4 P 80 A 720 LS 440
Komb.-Nr. 9 400 087 327

RQV 350-950 PA 609-6

supersedes –
company: Caterpillar
engine: 3304-NA
65,5 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,7+0,1	9,1-9,2	0,25(0,4)			
350	6,7-6,9	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 19	250	min.11,0	325	0,5-2,0
							350	6,3-6,5	400	2,7-3,1
ca. 66	10,7	980-990					540-600	=2,0	500	3,5-4,2
	4,0	1055-1085							800	6,1-6,6
	1150	0-1,0				300-400			1010	8,5

Torque control travel a = 1,1(1) mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
950	90,5-91,5 (88,5-93,5)	980-990*	500	95,5-97,5 (93,5-99,5)	100	152,0-172,0	950	11,7+0,1
							500	12,5+0,1
			700	100,0-102,0 (98,0-104,0)			700	12,4+0,2
							800	12,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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A2

A2

Test Specifications Fuel Injection Pumps ① and Governors

PES 4 P 80 A 720 LS 440
Komb.-Nr. 9 400 087 328

RQV 350-1000 PA 613-2

superseded
company: Caterpillar
engine: 3304-NA
59,0 kW

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,6+0,1	9,0-9,1	0,25(0,4)			
350	6,7-6,9	0,9-1,3	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 21	250	min.11,0	325	0,5-2,0
							350	6,5-6,7	400	2,7-3,1
ca. 70	10,6	1030-1040					550-610	=2,0	500	3,5-4,2
	4,0	1100-1130							800	6,1-6,6
	1180	0-1,0				300-400			1010	8,5
						(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9	
1000	90,0-91,0 (88,0-93,0)	1030-1040*	500	90,0-92,0 (87,5-94,5)	100	152,0-172,0	1000	11,6+0	1
							500	12,1+0	1
			700	95,0-97,0 (92,5-99,5)			700	12,0+0	2
							850	11,7+0	3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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Test Specifications Fuel Injection Pumps ① and Governors

PES 4 P 80 A 720 LS 440
Komb.-Nr. 9 400 087 313

RQV 375-1100 PA 732

supersedes –
company: Caterpillar
engine: 3304-NA
73,5 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,2-11,3	0,2(0,35)			
375	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 19	250	min.10,0	350	0,7-1,6
ca. 68	12,1	1130-1140					375	5,9-6,1	425	2,6-3,1
	4,0	1230-1260					480-540	=2,0	525	3,7-4,3
	1350	0-1,0				350-450			700	5,0-5,5
						(3a)			1130	8,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	112,0-113,0 (110,5-114,5)	-	700	107,5-110,5 (106,5-111,5)	100	152,0-172,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

A4

A4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 d

1.. Edition

40

En

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 755

Komb.-Nr. 9 400 087 321

supersedes -

company: Caterpillar

engine: 3306 T

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,1+0,1	11,9-12,0	0,25(0,4)			
350	6,7-6,9	1,0-1,7	0,2 (0,35			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 17	250	min.11,0	325	0,5-2,0
							350	5,9-6,1	400	2,7-3,1
ca. 70	12,1	1030-1040					510-570	= 2,0	500	3,5-4,2
	4,0	1110-1140							800	6,1-6,6
	1230	0 - 1,0							1010	8,6
						300-400 3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
LDA 1000	0,45 bar 118,5-119,5 (118,0-120,0)	1030-1040 *	LDA 800	0,45 bar 127,5-129,5 (125,5-131,5	100	152,0-172,0	1000	13,1+0,1
							600	14,4+0,1
LDA 600	0,45 bar 131,0-133,0 (129,0-135,0)		LDA 600	0 bar 108,5-110,5 (106,5-112,5			800	13,9+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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A5

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1) .
PES 6 P.. LS 456 + RQV .. PA 755	0,45	 0 0,27	14,4-14,5 13,0-13,1 13,8-13,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

A6

A6

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SKO 13,7 a
1. Edition
En

PE 6 P 120 A 320 RS 482 RQ 325/1000 PA 734
Komb.-Nr. 0 401 846 504
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Skoda
engine: M 2
270.0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,1+0,1	24,6-24,8	0,5 (0,8)			
325	6,6-6,8	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	12,8 4,0 1250	1045-1060 1115-1145 0-1,0	325	6,6	100 325 485-5	min.8,1 6,5-6,7 25=2,0	1000 700 790 865	13,8-13,9 14,8-14,9 14,5-14,7 14,0-14,3

Torque-control travel on flyweight assembly dimension a = 0,40 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 700	1,0 bar 246,0-248,0 (243,0-251,0)		LDA 1000	1,0 bar 240,0-244,0 (236,0-248,0)		

Checking values in brackets

10.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 482 + RQ..PA 734	1,0	0 0,76 0,65	14,1-14,2 13,0-13,1 13,6-13,7 13,1-13,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A8

En
A9

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 110 A 320 RS 483 ROV 250-1200 PA 499-1
Komb.-Nr. 0 401 846 505

supersedes
company: Volvo
engine: TD 71 F
162,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC); cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	13,7-13,9	0,4(0,75)			2,4-2,6 (2,2-2,9)
250	5,1-5,3	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min.6,6		
ca. 62	11,7	1240-1250					250	5,1-5,3		
	4,0	1380-1410				300-410				
	1500	0-1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0 bar	100	160,0-190,0	-	-
700	137,0-139,0		700	71,0-73,0		(160,0-190,0)		
	(134,0-142,0)			(68,0-76,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1) .
PE 6 P..RS 483 + RQV..PA 499-1	0,9	0 0,60 0,11	12,7-12,8 8,9-9,0 12,2-12,3 9,2-9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A10

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 7,0 b 1

1. Edition

En

PES 4 P 80 A 720 LS 852 RQV 350-1000 PA 609-5

Komb.-Nr. 9 400 087 326

supersedes –

company: Caterpillar

engine: 3304 T
78,7 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	10,7-10,8	0,25 (0,35			
350	6,7-6,9	1,0-1,7	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca.17	350	min.11,5	325	0,5-2,0
							350	6,3-6,5	400	2,7-3,1
ca. 68	11,2	1030-1040					530-590	= 2,0	500	3,5-4,2
	4,0	1110-1140				320-420			800	6,1-6,6
	1200	0-1,0							010	8,5
						③a				

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	106,5-107,5 (105,0-109,0)		500	109,0-112,0 (107,0-113,0)	100	RW = 17,6-18,6 mm	1000	12,2+0,1
							500	13,2+0,1
			700	113,0-115,0 (111,0-117,0)			700	13,1+0,2
							850	12,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A11

A11

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SSC 14,0 a 1

1. Edition

En

PE 12 P 100 A 520/6 RS 3103-1 RQV 375-1000 PA 639-2

Komb.-Nr. 0 401 830 711

supersedes SSCM

company: V 12.520 AN

engine: 220,0 kW

1- 8- 5-10- 3 - 7 - 6 - 11- 2 - 9 - 4 - 12

0-15-60-75-120-135-180-195-240-255-300-315 ± 0,5° (± 0,75°)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5+0,1	9,2-9,4	0,35(0,6)			
375	7,6-7,8	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1075	15,2-17,8	-	-	-	ca. 19	100	min.9,2	350	1,1-1,6
							375	7,6-7,8	450	3,3-3,7
ca. 65	10,5	1040-1050							700	5,2-5,6
	4,0	1120-1150				375-475			1000	7,7
	1250	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	92,0-94,0 (90,0-96,0)	1040-1050*	-	-	100	230,0-250,0 (226,0-254,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A12

A12

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SSC 21,0 b 1
2. Edition
En

PE 12 P 120 A 520 RS 3128 RQV 400-750 PA 708
Komb.-Nr. 0 401 840 721
1- 8- 5-10- 3 - 7 - 6 - 11- 2 - 9 - 4 - 12
0-15-60-75-120-135-180-195-240-255-300-315 ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5.85
company: SSCM
engine: V 12.520 S 25
441 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,3+0,1	22,9-23,1	0,5(0,9)			
400	6,9-7,1	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,3 4,0 900	750-755 788-801 0-1,0	400	7,0	100 400	min.8,5 6,9-7,1	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-100 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	229,0-231,0 (226,0-234,0)	-	-	-	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

10.85

A13

PE 6 P 120 A 320 RS 3129 RQV 250-975 PA 709
1-4-2-6-3-5 je 60° ± 0,5° (± 0,75°)

supersedes 1.85
company: Rolls Royce
engine: Eagle III
204 kW
Komb.-Nr. 0 401 846 793

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port opening at prestroke 5,7-5,8 (5,65-5,85) mm (from BDC)

Mark for end of pump delivery 7,5° before end of pump delivery cyl.1.
RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,7+0,1	20,6-20,8	0,5(0,9)			
250	5,6-5,8	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 16	100	min.7,1	250	1,1-1,2
							250	5,6-5,8	330	2,1-2,6
ca. 66	11,7	1015-1025							450	3,2-3,5
	4,0	1105-1135							1020	8,3
	1250	0-1,0				355-415				
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	206,0-208,0 (203,0-211,0)	1015-1025*	500	188,0-194,0 (185,0-197,0)	100	200,0-220,0 (196,0-224,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

05.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 r 1
1. Edition
En

PE 6 P 120 A 320 RS 3134 RQV 250-1100 PA 764
Komb.-Nr. 9 400 087 312
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Volvo
engine: TM 101 G

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,8+0,1	27,8-28,0	0,5(0,9)			
250	5,6-5,8	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 9	100	min.4,0	250	0,7-1,1
ca. 49	13,8	1160-1170					250	2,1-2,3	500	2,9-3,2
	4,0	1265-1295					230-290	=2,0	800	5,0-5,3
	1375	0-1,0							1100	7,7
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,35 bar	1160-1170*	LDA	0 bar	100	240,0-260,0	-	-
700	278,0-280,0		700	259,0-261,0				
	(275,0-283,0)			(256,0-264,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A15

A 45

D. Adjustment Test for Manifold Pressure Compensator VOL 10,0 r 1

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1) .
PE 6 P..RS 3134 + RQV..PA 764	0,35	0 0,21 0,16	14,8-14,9 14,0-14,1 14,5-14,7 14,2-14,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A16

En A16

PE 6 P 120 A 720 RS 7001 RQ 200/1100 PA 713

Komb.-Nr. 0 402 646 819

supersedes 11.84
company: Scania
engine: DS 11 25, 26

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	16,1-16,3	0,6(0,9)			3,3±0,1
225	4,4-4,6	1,1-1,5	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
800	15,2-17,8	800	16,5	10,7	1145-1160	225	4,5	100	min.5,9	-	-
				4,0	1305-1355			225	4,4-4,6		
VH = max. 46°				1400	0 - 1,0			300-340	=2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 700	0,5 bar 161,0-163,0 (158,0-166,0)	-	LDA 1100	0,5 bar 163,0-171,0 (161,0-173,0)	100	240,0-290,0 =20,0-21,0 mm RW
			LDA 500	0 bar 120,0-124,0 (118,0-126,0)		

Checking values in brackets

10.85

A17

A 17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P.. RS 7001 +RQ.. PA 713	0,50	0 0,28 0,17	11,7-11,8 10,3-10,4 11,4-11,5 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 17.5.1984
- Start of fuel delivery-engine: DS 11 25 - 15° / DS 11 26 - 11° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 w 2
2. Edition
En

PE 6 P 120 A 720 RS 7007 y RQV 200-1000 PA 539-2
Komb.-Nr. 0 402 646 812 y
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 7.85
company: Scania
engine: DSC 1102
LKW 112

See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing difference between control-rod travel 8 mm and max. 1,85-2,55° camshaft = RW 6,0 - 8,0

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	16,0+0,1	22,4 - 22,6	0,7 (1,0)			3,3 ± 0,1
225	4,4-4,6	1,4 - 1,8	0,3 (0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in [ ].

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 10 (3a)	100	min. 5,9	150	0,5-0,8
							225	4,4-4,6	430	3,1-3,6
ca. 62	15,0	1040-1050					310-370	=2,0	720	5,1-5,4
	4,0	1175-1205							1000	7,9
	1300	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 224,0-226,0 (221,0-229,0)	1040-1050 *	LDA 1000	0,9 bar 220,0-228,0 (218,0-230,0)	100	240,0-290,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 164,0-168,0 (162,0-170,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 7007 y +RQV..PA 539-2	0,90	0 0,41 0,29	16,0 - 16,1 11,8 - 11,9 14,0 - 14,1 12,4 - 12,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 18.8.1983
- Start of fuel delivery-engine: 22° before TDC at RW = 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ① and Governors

PE 8 P 120 A 520/5 RS 7115 RQV 300-1150 PA 756
Komb.-Nr. 0 402 648 823
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
1- 8- 5- 4 - 7 - 2 - 3 - 6
0-30-90-120-180-210-270-300 ° ± 0,5 ° (± 0,75 °)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -
company: MWM
engine: TBD 234 V 8

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	19,1-19,3 (18,8-19,6)	0,5 (0,9)			
300	5,9-6,1	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 11	100	min.7,4	300	1,3-1,4
							300	5,9-6,1	325	1,6-2,0
ca. 66	11,0	1190-1200							390	2,4-2,8
	4,0	1275-1305				310-530			470	3,0-3,5
	1400	0 - 1,0							1190	8,5
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.		1190-1200*			100	200,0-240,0 (196,0-244,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.95

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 8 P..RS 7115 + RQV..PA 756	0,7	0 0,10	12,0-12,1 10,0-10,1 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A22

En

A22

PES 6 A 95 D 410 RS 2108 U RQ 200/1100 AB 647 L
Komb.-Nr. 0 400 846 247

supersedes 11.84
company: Raba
engine: -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7-1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	10,7-10,9	0,35 (0,6			
200	6,1-6,3	0,9-1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,4-16,4	600	15,9	10,0 4,0	1145-1160 1195-1225	200	6,0	100 200 350-390	min. 7,0 5.9-6,1 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	107,0-109,0 (105,0-111,0)	-	700	104,0-107,0 (101,5-109,5)	100	19,5-21,0 mm RW
			500	98,0-101,0 (95,5-103,5)	200	6,2 mm RW

Checking values in brackets

7.85

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung
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A23

A23

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 OMB 4,4 c 2
3. Edition
En

PES 4 A 90 D 410 RS 2195 Z RQ 250/1200 AB 849 L
Komb.-Nr. 0 400 844 063

supersedes: 11.84
company: OM-Brescia
engine:

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8+0,1	6,8-6,9	0,3(0,45			
250	8,4-8,6	1,0-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,6-16,4	650	16,0	9,8 4,0	1245-1260 1325-1355	250	6,0	100 250 425-465	min.7,2 5,9-6,1 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1245-1260 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1200	68,0-69,0 (66,0-71,0)	-	800	58,0-62,0 (56,0-64,0)	100	16,3-17,0 mm RW

Checking values in brackets

7.85

A24

A24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 8,8 a
4. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS2416	RQ.. 865D, 1054 ..A8C616D,..A7C616D	superseded 3.84
PES 5 A 95 D 410 RS 2417	EP/RSV .. A8 B616D, A7 B616D	company KHD Lizenz TAM
PES 4 A 95 D 410 RS2424	RQV 275-1325 AB799D	engine F6 L413R (8,8) F5 L413R (7,4) F4 L413R (5,9)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,70-1,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

RQ 275/1100 AB865D

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1130	14,5-14,8	570	0	100	7,4-8,1	800	15,8-16,0
				1200	6,2-11,5			200	6,2-8,1		
				1230	0 - 9,5			350	2,4-4,6		
				1320	0			460	0	1000	14,8-15,0

Torque control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000strokes 7
page 5 - 6					100	114 - 124

Checking values in brackets

4.85

B. Governor Settings

RQ 275/1200 AB865D

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1220 1280 1300 1420	14,5-14,8 7,0-12,1 0 - 6,7 0	560	0	100 200 350 460	7,3-8,1 6,1-8,1 2,4-4,6 0	800 1000	15,8-16,0 14,8-15,0

Torque-control travel on flyweight assembly dimension a - 0,35 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
	page 5 - 6					

Checking values in brackets

B. Governor Settings

RQ 275/1325 AB865D

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1340 1400 1470 1560	14,5-14,8 9,6-13,0 0 - 8,2 0	560	0	100 200 350 460	7,4-8,1 6,1-8,1 2,5-4,6 0	800 1000	15,8-16,0 14,8-15,0

Torque control travel on flyweight assembly dimension a - 0,35 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
	page 5 - 6					

Checking values in brackets

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel / Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

..A7 C616D
300-750 A7 B616D

ca. 48	750	16,0	without auxiliary spring			ca.24	300	6,0	730	0
	800	8,0								
	820	4,2					125	19,0-21		
							300	5,7-6,3	350	0,7-0,9
	785	9,4-11,6					450	0,6-3,2		
	810	4,8- 7,7	with auxiliary spring				560	0 - 1		
	940	0,3- 1,0								

300-900 A7 B616D

ca. 60	900	16,0	without auxiliary spring			ca.27	300	6,0	880	0
	950	9,8								
	975	6,0					100	19 - 21		
							300	5,7-6,3	400	0,9-1,1
	950	8,6-10,9					450	0,8-3,3		
	1000	2,8- 4,7	with auxiliary spring				600	0 - 1		
	1100	0,3- 1,0								

300-1000 A8 B616D

ca. 50	1000	16,0	without auxiliary spring			ca.21	300	6,0	980	0
	1050	11,7								
	1100	6,5					150	19 - 21		
							300	5,7-6,3	400	0,9-1,1
	1050	10,8-12,6					500	1,2-3,6		
	1120	4,0- 6,0	with auxiliary spring				650	0 - 1		
	1270	0,3- 1,0								

..A8 C616D
300-1150 A8 B616D

ca.55	1150	16,0	without auxiliary spring			ca.20	300	5,5	1140	0
	1200	11,8								
	1250	7,0					300	5,9-6,1	800	0,4-0,6
							540-600	2,0	400	0,9-1,0
	1200	11,0-12,8								
	1300	2,7- 4,6	with auxiliary spring							
	1430	0,3- 1,0								

..A8 C616D
300-1325 A8 B616D

ca.68	1325	16,0	without auxiliary spring			ca.24	300	6,0	1310	0
	1400	9,4								
	1440	5,0					150	19 - 21		
							300	5,7-6,3	450	0,9-1,1
	1400	8,3-10,5					450	2,3-4,4		
	1450	3,0- 4,7	with auxiliary spring				650	0 - 1		
	1600	0,3- 1,0								

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
RQ 900 AB 1054										
ca. 26	850 900 950	16,0-19,0 9,0-12,5 0,8- 3,8	-	-	-	-	-	-	900 -	3,2 -
RQ 750 AB 1054										
ca. 26	720 750 800	15,0-18,0 8,8-11,7 0 - 2,4	-	-	-	-	-	-	750 -	3,4 -
RQV 275-1325 AB799D									torque-control travel Maß a = 0,9 mm	
ca. 68	1375 1630	15,0-18,0 0	-	-	-	ca.12	200 400 600 750 850	6,4-8,2 2,8-4,6 1,5-3,0 0 -1,4 0	1375 1325 500	8,3 0 0,8-1,0
ca. 66	1325 1410 1490 1600	15,0-17,5 7,4-13,0 0 - 8,0 0								

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 85(115) - 105(413) - 125(170) / 2650								
1325	80,5-82,5	1340	850		77,5-80,5	100	119 - 129	
2. 79(108) - 100(136) - 120(163) / 2650								
1325	77,5-79,5	1340	850		74,5-77,5		"	
3. 81(110) - 101(137) - 121(169) / 2500								
1250	80,5-82,5	1270	850		77,5-80,5		"	
4. 77(105) - 97(132) - 116(158) / 2500								
1250	77,5-79,5	1270	850		74,5-77,5		"	
5. 74(100) - 92(125) - 110(150) / 2500								
1250	72,5-74,5	1270	850		71,5-74,5		"	
6. 76(104 - 96(130) - 115(156) / 2300								
1150	78,5-80,5	1170	850		77,5-80,5		"	
7. 74(100) - 92(125) - 110(150) / 2300								
1150	74,5-76,5	1170	850		74,5-77,5		"	
8. 70(95) - 87(118) - 105(143) / 2300								
1150	70,5-72,5	1170	850		71,5-74,5		"	
9. 66(90) - 83(113) - 100(136) / 2300								
1150	66,5-68,5	1170	850		67,5-70,5		"	
10. 70(95) - 87(118) - 104(142) / 2150								
1075	74,5-76,5	1090	850		74,5-77,5		"	
11. 66(90) - 82(112) - 99(135) / 2150								
1075	70,5-72,5	1090	850		71,5-74,5		"	
12. 63(85) - 79(107) - 95(129) / 2150								
1075	66,5-68,5	1090	850		67,5-70,5		"	
13. 66(90) - 82(112) - 99(135) / 2000								
1000	73,5-75,5	1020	850		73,5-76,5		"	
14. 62(84) - 78(106) - 94(128) / 2000								
1000	70,5-72,5	1020	850		71,5-74,5		"	
15. 60(82) - 75(102) -90(122) / 2000								
1000	67,5-69,5	1020	850		68,5-71,5		"	

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation rev/min 3	Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel rev/min 8	mm
16. 60(82) - 76(103) - 91(124) / 1800								
900	74,5-76,5	910		-	-	100	119-129	
17. 57(78) - 72(98) - 87(118) / 1800								
900	70,5-72,5	910		-	-		"	
18. 54(74) - 69(94) - 83(113) / 1800								
900	67,5-69,5	910		-	-		"	
19. 50(68) - 63(85) - 76(103) / 1500								
750	74,5-76,5	760		-	-		"	
20. 48(65) - 60(82) - 72(98) / 1500								
750	70,5-72,5	760		-	-		"	
21. 46(62) - 57(78) - 68(93) / 1500								
750	66,5-68,5	760		-	-		"	
F 4 - 5 6 L 413 R - A power output at speed								
22. 66(90) - 83(113) -100(136) / 2300								
1140	73,5-75,7	1150					"	
23. 63(85) - 79(107) -95(129) / 2150								
1065	74,5-76,5	1075					"	
24. 60(81) - 75(102) - 90(122) / 2000								
990	73,5-75,7	1000					"	
25. 54(74) -69(94) -83(113) / 1800								
890	74,5-76,5	900				"		
26. 46(62) - 57(78) - 68(93) / 1500								
740	73,5-75,5	750					"	
F 6 L 413 FR - A power output at speed								
27. 90 / 1500								
700	85,5-87,5	750-755					"	
28. 106 / 1800								
850	85,5-87,5	900-905					"	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 6,2d

7. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 320/3 RS 2483 RSV 325-1200 A2 R 777DR
Change of governor to
RSV 400-1200 A2B 777 R
A2C 777 R

supersedes 5.80
company MWM
engine TD 228-6
110 kW

Komb.-Nr. 0 400 866 072

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) ;RW=7,5 mm

Difference between CRT9 + 21 3.5-4.5°

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	10,5-10,6	7,3 - 7,4	0,3 (0,45)			
400	6,4-6,6	0,6 - 1,2	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0					ca. 17	325	6,5	1180	10,5-10,6
	x = 3,5						100	min. 19	750	11,5-11,7
							400	6,4-6,6	500	11,7-11,8
ca. 13	9,5	1220-1230					610-670	= 2,0		
(2a)	4,0	1260-1290					725	0 - 1		
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to	(3a) Fuel delivery characteristics		Starting fuel delivery rule (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1180	0,7 bar 73,0 - 74,0 (71,0 - 76,0)	1220-1230*	LDA 500	0,7 bar 72,0 - 74,0 (70,0 - 76,0)	-	-	-	-
LDA 750	0,7 bar 79,0 - 82,0 (77,0 - 84,0)		LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

B7

B7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2483 + RSV..A2B 777R A2C 777R	0,70		11,7 - 11,8
		0,09	11,4 - 11,5
		0,06	11,0 - 11,2
		0	10,7 - 10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 KHD 1 g 3
9. Edition
En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1150 AOB 2168 L
AOB 2168 L

Komb.-Nr. 0 400 864 054

Symbol S 29

supersedes 5,84
company KHD
engine BF 4 L 913
66 kW/2300 min^{-1}
tractor DX92 (1)
60 kW/2300 min^{-1}
tractor DX86 (2)
BF 4 L 913 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Symbol S 28

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1110	12,3+0,1	8,0-8,1	0,3(0,45)			
325	8,1-8,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 31	325	7,7	1110	12,3-12,4
	x = 1,0								500	13,1-13,2
							325	8,1-8,3	940	12,7-12,9
ca.55	11,3	1155-1165					700-760	= 2,0		
(2a)	4,0	13,0-13,0								
	1465	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1110	80,0-81,0 (78,0-83,0)	1155-1165*	700	79,5-81,5 (77,0-84,0)	100	100,0-110,0 (97,0-113,0) = 16,8 - 17,2 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.26	325	7,0	1150	10,5+0,1
	x =	4,0					100	min.19,0	500	11,2+0,1
ca. 56	9,6	1220-1230					325	7,4-7,6	900	10,9+0,3
(2a)	4,0	1325-1355					720-780	= 2,0		
	1475	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	800	65,5-68,5 (63,5-70,5)	100	108,5-118,5	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

B10

En

B10

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 b 1
2. Edition
En

PES 6 A 95 D 410 LS 2639-1 RQ 250/1100 AB 1137-7 L
Komb.-Nr. 0 400 846 524

supersedes 6.83
company MAN
engine D 2566 MUH/MUM
176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 - 1,6 (1,45-1,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference ** cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,6+0,1	13,5 - 13,7	0,35(0,6)			
250	7,5-7,7	0,9 - 1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,6 4,0 1350	1145-1160 1270-1300 0 - 1,0	250	7,0	100 250 395-435 450	min. 6,9-7,1 =2,0 max. 1,0	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	135,0-137,0 (133,0-139,0)	-	500 700	121,5-125,5 (119,0-128,0) 121,0-124,0 (118,5-126,5)	100 -	95,0-105,0 (92,0-108,0) = 14,4-14,6 mm RW

Checking values in brackets

7.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 g 4
7. Edition
En

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103
RSF 375/2250 M 19
Komb.-Nr. 0 400 074 978 Sales model 0 400 074 977

supersedes 1.85
company Daimler-Benz
engine OM 615
44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 170-180 (1,65-1,85) mm (from BDC) 18,5-21,5 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	12,2$^{+0,1}$	3,2-3,3	0,25 (0,3)			
375	6,4-6,6	0,65-0,75	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6
13-17	(1) min. 12,0	250		(7) 11,3-11,5	2200
	(1) max. 11,5	300			
	(2) 6,4-6,6	375	50	(8) 6,7-7,1	2500
	(3) 5,1-5,3	450 **		(9) -	-
	(4) -	-		(10) 0-1,0	2950
	(5) 2,0	720-820		(11)	

Variations in control rod travel:	Rotational speed rev/min 8	Control rod travel mm 9
(12)	100	min. 20,1
(13)	1800	11,7-11,9
(14)	1000	12,2-12,3
(6) Switching point		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) rev/min 4	(18) cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (33,0-36,0)	2500* RW 6,7-7,1	1800	33,0-35,0 (32,0-36,0)	100	min. 53,0	6,0 (12a)
			1000	32,0-33,0 (31,0-35,0)	375	6,5-7,5 (5,5-9,0)	1,0
							1,5 (15)
					2500	13,0-17,0 (12,0-18,0)	2,5 See
							3,0 Point 8 a (16)

Checking values in brackets

*ca. 3,5 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (5.0-5.4 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1.4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 h

En 2. Edition

supersedes 10.81

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103
RSF 375/2250 M 20
0 400 074 975/..976

1 - 3 - 4 - 2 je 90°

company Daimler-Benz
engine OM 615
44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke: 1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel: 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,4+0,1	2,95-3,05	0,25(0,3)			
375	6,4-6,6	0,65-0,75	0,1 (0,15)			
1900			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6
13-17	(1)	min.12,0	250	50	(7)	11,4+0,1	1000
	(2)	6,4-6,6	375		(8)	7,6-8,0	2500
	(3)	5,1-5,3	450 **		(9)	0-1,0	2950
	(4)	-			(10)		
	(5)	2,0	720-820		(11)		

Variations in control rod travel:		Rotational speed rev/min 8	Control rod travel mm 9
	(12)	100	min.20,1
	(13)	1900	10,9-11,1
	(14)	2200	10,7-10,9
Switching point	(6)		

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery (19) Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	31,5-33,5 (30,5-34,5)	2500*	1900	32,0-34,0 (31,0-35,0)	100	min. 55,0	6,0 (12a)
			1000	29,5-30,5 (28,5-31,5)	375	6,5-7,5 (5,5-9,0)	1,0 (1,5) (15)
					2500	17,0-21,0 (16,0-22,0)	2,5 (3,0) See point 8a (16)

Checking values in brackets

*ca. 3,0 less control rod travel than in Column 2

12.85

B14

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (5.0-5.4 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 L

2. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 4
Komb. Nr. 0 400 074 997

supersedes 1.85
company Daimler-Benz
engine OM 615
49 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke: 1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel: 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (compensating valve) mm 6
1000	13,0+0,1	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1 (0,15)			
1600			0,25(3,0)			
2300			0,25(3,0)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
11-15 ①	min.11,0	250	50 ⑦	12,4-12,6	2300	⑫	100	min.20,1
②	max.10,5	300	⑧	9,5	2570	⑬	1600	12,7-12,9
③	6,1-6,3	375	⑨			⑭	1000	13,0-13,1
④	4,8-5,0	450 **	⑩	0-1,0	2950			
⑤	-		⑪					
	2,0	720-820				⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery ⑲ Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2300	38,5-40,5 (37,5-41,5)	2570 * RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min.53,0	6,0
					375	6,5-7,5 (6,0-8,0)	1,0 (1,5) ⑫a
			1000	37,0-38,0 (36,0-39,0)			
					2570	15,0-21,0 (14,0-22,0)	6,0 (3,0) ⑮ ⑯

Checking values in brackets

*ca. 3,0 less control rod travel than in Column 2

12.85

B16

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 45°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 28°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 K
2. Edition
En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 6
Komb.-Nr. 0 400 074 995

supersedes 1.85
company Daimler-Benz
engine OM 615
49 kW
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,0+0,1	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1(0,15)			
1600			0,25(0,3)			
2300			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
11-15 ①	min.11,0	250	50 ⑦	12,4-12,6	2300	⑫	100	min. 20,1
②	max.10,5	300	⑧	9,5	2650	⑬	1600	12,7-12,9
③	6,1-6,3	375	⑨			⑭	1000	13,0-13,1
④	4,8-5,0	450 **	⑩	0-1,0	2900			
⑤	-		⑪					
	2,0	720-820				⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2300	38,5-40,5 (37,5-41,5)	2650* RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min. 53,0	6,0 ⑫a
			1000	37,0-38,0 (36,0-39,0)	375	6,5-7,5 (6,0-8,0)	1,0 (1,5)
					2650	15,0-21,0 (14,0-22,0)	2,5 ⑮ (3,0)
							⑯

Checking values in brackets

*ca. 3,0 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 45°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 28°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

Test-No. 0 400 074 957

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 17
Komb.-Nr. 0 400 074 956 Sales model 0 400 074 957

1 - 3 - 4 - 2
0 - 90-180-270

supersedes 1.85
company Daimler-Benz
engine OM 616
53 kW (72 PS)
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) Control rod travel 18,5-21,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,4$^{+0,1}$	3,9-4,0	0,25(0,3)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed				Upper rated speed				Variations in control rod travel			
Degree of deflection of control lever		Control rod travel	Rotational speed	Degree of deflection of control lever		Control rod travel	Rotational speed			Rotational speed	Control rod travel
		mm	rev/min			mm	rev/min			rev/min	mm
1		2	3	4		5	6	7		8	9
9-13	(1)	min.11,0	250	50	(7)	12.5-12,7	2200		(12)	100	min. 20,1
	(2)	max.10,5	300		(8)	8,2-8,6	2500		(13)	1800	12,8-13,0
	(3)	6,0-6,2	375		(9)	-	-		(14)	1000	13,4-13,5
	(4)	4,8-5,0	450 **		(10)	0-1,0	2950				
	(5)	-	-			-					
		2,0	720-820		(11)				(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery (19) Test oil temp 40°C (104°F)		Full load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0
					2500	23,0-27,0 (22,0-28,0)	1,5 (15) 2,5 See 3,0 Point 8 a (16)

Checking values in brackets

*ca. 4,2 less control rod travel than in Column 2

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{0}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{0}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 L 2
1. Edition
En

PES 4 M 55 C 320 RS 107-1
RSF 375/1700 M 18-1
0 400 074 955
1 - 3 - 4 - 2 je 90°

supersedes –
company Daimler Benz
engine OM 616
45 kW-
Tunnelling or mining vehicles

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) Control rod travel 20-22

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1650	11,9+0,1	3,55-3,65	0,25(0,3)			
375	6,0-6,2	0,6-0,7	0,1(0,15)			
1200			0,25(0,3)			
600			0,25(0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6		Rotational speed rev/min 8	Control rod travel mm 9
11-15 ①	min. 11,0	250	50 ⑦	11,9+0,1	1650	⑫	100	min. 20,1
②	max. 10,5	300	⑧	7,0-7,4	1900	⑬	1200	12,1-12,3
③	6,0-6,2	375	⑨	–		⑭	600	12,8-13,0
④	4,8-5,0	450**	⑩	0-1,0	2950			
⑤	–						Switching point	
	2,0	720-820	⑪			⑥		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp. 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery Idle		Difference
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8
1650	35,5-36,5 (34,5-37,5)	1900* 7,0-7,4 mm RW	1200	34,5-36,5 (33,5-37,5)	100	min. 53,0	6,0 ⑫a
			600	34,5-36,5 (33,5-37,5)	375	6,0-7,0 (5,5-9,0)	1,0 (1,5)
					1900	16,0-20,0 (15,0-21,0)	2,5 (3,0) ⑮ See Point 8 a ⑯

Checking values in brackets

ca. 4,7 less control rod travel than in Column 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).

2. Adjusting the idle control-lever position:

   At 700 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 VOL 4,5 g

4. Edition

En

Testoil-ISO 4113

PES 4 MW 100/320 RS 1102 RSV 300-1000 MW 1 A 315
0 403 474 001
*

supersedes 10.84
company Volvo
engine TD 45
84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700*	11,9+0,1	10,9-11,1	0,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	11,9+0,1		0,55(0,7)			

*At the minimum full-load stop, set a control-rod travel of 12.6-12.7 mm with n = 1000 min/1. At the maximum full-load stop, make the full-load adjustment according to test specifications.

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 12	300	5,1-5,2		
							300	5,6-5,7		
ca. 52	10,9	1040-1050					360-420	= 2,0		
(2a)	4,0	1055-1085								
	0,3-1,7	1200								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	109,0-111,0 (107,0-113,0)	1040-1050*	1000	110,0-114,0 (107,5-116,5)	300	13,0-17,0 (10,5-19,5)	300	5,6-5,7

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

B24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 1
3. Edition
En

Testoil-ISO 4113

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 15
Komb.-Nr. 0 400 075 991 Sales model 0 400 075 989

1 - 2 - 4 - 5 - 3
0 - 72-144-216-288

supersedes 1.85
company Daimler-Benz
engine OM 617 (65 kW)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,4 +0,1	3,9-4,0	0,25(0,30)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ( ) Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
9-13			50					
(1)	min. 10,0	250	(7)	12,5-12,7	2200	(12)	100	min. 20,1
(2)	max. 9,5	300	(8)	8,6-9,0	2500	(13)	1800	13,0-13,2
(3)	6,0-6,2	350	(9)	-	-	(14)	1000	13,4-13,5
(4)	4,6-4,8	450 **	(10)	0-1,0	2950			
(5)	-	-	(11)					
	2,0	720-820				(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0
							1,5 (15)
					2500	23,0-27,0 (22,0-28,0)	2,5 See Point 8 a (16)

Checking values in brackets *ca. 4,0 less control rod travel than in Column 2

1 : .85

C1

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,5-4,7).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^0. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^0. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 n
2. Edition
En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 375/2300 M 55-4
Komb.-Nr. 0 400 074 936
1- 3- 4 - 2
0-90-180-270

supersedes 3.85
company Daimler-Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW = 20,0-22,0 mm

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
375	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed				Upper rated speed				Variations in control rod travel		
Degree of deflection of control lever		Control rod travel	Rotational speed	Degree of deflection of control lever		Control rod travel	Rotational speed		Rotational speed	Control rod travel
		mm	rev/min			mm	rev/min		rev/min	mm
1		2	3	4		5	6	7	8	9
13-17	①	min.11,5	250	50	⑦	11,1-11,2	1000	⑫	100	min. 20,1
	②	5,4-5,6	375		⑧	7,8-8,2	2500	⑬	1800	10,8-11,0
	③	4,4-4,6	400 **		⑨	-		⑭	2200	10,3-10,5
	④	-			⑩	0-1,0	2900			
	⑤	1,5	630-730		⑪			⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery ⑲ Test oil temp 40°C (104°F)		Full load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery Idle		Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500 * RW = 7,8-8,2	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑫a
					375	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See ⑮ (3,0) Point 8 a ⑯

Checking values in brackets

*ca. 2,4 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

C3

1. ** Checking the idle speed auxiliary spring setting at n = 400 rpm, control rod travel (4.3-4.7 mm).

2. Setting the idle control lever position:

   At 1000 rpm, control rod travel 0.9 - 1.0 mm.

3. Checking the idle speed auxiliary spring shut-off

   Control lever position 50°, after change-over point (from starting curve) until 1000 rpm, max. permissible control rod travel 0.2 mm. Control lever position 48.5°; after change-over point (from starting curve) control rod travel must be greater than 0.2 mm.

4. Checking the pneumatic shut-off box

   Control lever on idle stop.
   AT n = 375 rpm and pu = 450 mbar, the control rod must travel rapidly to control rod position = 0 mm

5. Overflow valve 1 469 990 351,

6. Port closing difference between largest/smallest value max. 1° camshaft angle.

7. Setting the idle speed control rod travel on the pneumatic idle boost box

   When doing this, release the lock nut.

8. Checking the pneumatic idle boost:

   With 0.4 bar vacuum, n = 425 rpm, control rod travel = (7.0 - 8.6 mm) Delivery = (11.0 - 19.0 cm^3/1000 strokes).

9. Apply 0.8 bar vacuum to the pneumatic idle boost box via a three-way valve and a pressure gauge. Using the three-way valve, disconnect the vacuum supply from the pneumatic idle boost box and pressure gauge. Permissible pressure drop 30 mbar in 15 sec.

10. Start-of-delivery sensor setting

    Start-of-delivery sensor setting and locking according to average port closing value for all cylinders 19.5 ± 0.2 (0.3)° camshaft angle after cylinder 1.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 8,8 a

5. Edition

En

PE 6 A 100 C/D 320 RS 3008 EP/RSV 300-1150 A 1 B 489 DR / A 1 C 489 DR

supersedes 8.84
company MWM
engine D/TD 232 - 6 / D/TD 232 - 8

PE 8 A 100.. RS 3009 EP/RSV 300-1150 A 1 B 489 DR / A 1 C 489 DR

Instructions P. 3 RQV 300/550-750 AB 660 R, 871 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1130	9,5-9,6	9,0-9,2	0,35 (0,6)			
300	6,0-7,1	1,5-2,1	0,35 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

Test oil ISO 4112

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	300	5,5	See note	
	x =	4,0					300	5,9-6,1		
ca. 60 (2a)	8,5	1170-1180					485-545	= 2,0		
	4,0	1200-1230								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
See page 4-14		-	-	-	100	15,7-16,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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C5

B. Governor Settings

RQV .. 660R, 871R**

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	750	14,8-17,8	ca.34	520	13,7-15,5	ca.10	250	6,8-8,0		
	770	9,0-14,0		600	8,5-10,0		300	4,5-7,0		
	790	3,5-10,5		650	4,5-7,0		350	3,6-4,0		
	800	0 - 8		720	0		550	1,8-4,0		
(5)	840	0					630	0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
See page 4-14					100	15,7-16,3 mm RW		
			(6a)		300	5,3-5,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

** Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at MWM 1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

(2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2

(3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5

(6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:
1 - 6 - 3 - 2 - 5 - 4
0 -90 -120-210-240-330°

PE 8 A:
1 - 8 - 5 - 4 - 7 - 2 - 3 - 6
0 -30 -90 -120-180-210-270-300°

C7

En

C7

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 165 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B'162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B 162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270						
F 160 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B'155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B 155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170						
A 141 PS / 2300 min^{-1}								
1185	76,0-78,0	1200						
B'144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5-85,5				
B 144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060						
A 131 PS / 2100 min^{-1}								
1080	73,0-75,0	1090						
F 144 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5-85,5				
B'138 PS / 2000 min^{-1}								
1000	77,0-79,0	1010		82,5-85,5				

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 138 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 126 PS / 2000 min^{-1}								
1030	73,0-75,0	1040						
B 127 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A'115 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 115 PS / 1800 min^{-1}								
930	74,0-76,0	940						
B 108 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A' 98 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 98 PS / 1500 min^{-1}								
775	76,0-78,0	785						
B 162 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 143 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 130 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

En

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C9

C9

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 120 PS / 1500 min^{-1}

750	90,0-92,0	760

Emergency power output

C 109 PS / 1500 min^{-1}

750	90,0-92,0	760

Emergency power output

Checking values in brackets

* 1 mm less control rod travel than col. 2

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 220 PS / 2500 min^{-1}								
1250	81.0-83,0	1270	750	82,5-85,5				
B'216 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B 216 PS / 2500 min^{-1}								
1250	81,0-83,0	1270						
F 213 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B'206 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B 206 PS / 2300 min^{-1}								
1150	80,0-82,0	1170						
A 188 PS / 2300 min^{-1}								
1185	76,0-78,0	1200						
B'192 PS / 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5-85,5				
B 192 PS / 2100 min^{-1}								
1050	77,0-79,0	1060						
A 175 PS / 2100 min^{-1}								
1080	73,0-75,0	1090						
F 192 PS / 2000 min^{-1}								
1030	77.0-79,0	1040	750	82,5-85,5				
B'184 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5-85,5				

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery - Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 184 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 168 PS / 2000 min^{-1}								
1000	73,0-75,0	1010						
B 169 PS / 1800 min^{-1}								
930	78,0-80,0	940						
A'154 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 154 PS / 1800 min^{-1}								
900	74,0-76,0	910						
B 144 PS / 1500 min^{-1}								
775	80,0-82,0	785						
A'130 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 130 PS / 1500 min^{-1}								
750	76,0-78,0	760						
B 216 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 190 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 173 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
D 160 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								
C 145 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								

(1)

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C13

En
CAB 1/3

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 210 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B'207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B 207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170						
A 188 PS / 2300 min^{-1}								
1185	101,0-103,0	1200						
B'192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060	800	104,5-107,5				
B 192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060						
A 174 PS / 2100 min^{-1}								
1080	99,0-101,0	1090						
F 192 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B'184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B 184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010						
A 167 PS / 2000 min^{-1}								
1030	98,0-100,0	1040						
B 168 PS / 1800 min^{-1}								
900	101,0-103,0	910						

(1)

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C14

En CA61

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A'153 PS / 1800 min^{-1}								
900	101,0-103,0	910						
A 153 PS / 1800 min^{-1}								
930	97,0-99,0	940						
B 142 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A'129 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A 129 PS / 1500 min^{-1}								
775	96,0-98,0	785						

① Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

C15

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B'292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270						
F 280 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B'275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B 275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170						
A 250 PS / 2300 min^{-1}								
1185	96,0-98,0	1200						
B'255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060	800	100,5-103,5				
B 255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060						
A 232 PS / 2100 min^{-1}								
1080	95,0-97,0	1060						
F 256 PS / 2000 min^{-1}								
1000	99,0-101.0	1010	800	100,5-103,5				
B'245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010	800	100,5-103,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

① Testoil-ISO 4113

C: Settings for Fuel Injection Pump with Fitted Governor

(1)

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010						
A 222 PS / 2000 min^{-1}								
1030	95,0-97,0	1040						
B 224 PS / 1800 $min.^{-1}$								
900	99,0-101,0	910						
A'203 PS / 1800 min^{-1}								
900	99,0-101,0	910						
A 203 PS / 1800 min^{-1}								
930	95,0-97,0	940						
B 189 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A'172 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A 172 PS / 1500 min^{-1}								
750	94,0-96,0	760						
D 250 PS / 1800 min^{-1}								
900	111,0-113,0	910						
Emergency power output								
C 227 PS / 1800 min^{-1}								
900	111,0-113,0	910						
Emergency power output								
D 210 PS / 1500 min^{-1}								
750	111,0-113,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C: Settings for Fuel Injection Pump with Fitted Governor

(1)

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
C 191 PS / 1500 min^{-1}								
750	111,0-113,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 i
6. Edition
En

PE 6 P 110 A 320 RS 372 RSV 250-1100 P 5/458 R

Komb.-Nr. 0 401 876 235

Note VDT-I-420/114!

supersedes 5.84
company DAF
engine DKTD 1160

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7-14,0	0,4 (0,75)			
250	6,6-6,8	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,2-12,3
	x = 3,5						250	6,6-6,8	300	12,4-12,9
ca. 51	11,0	1140-1150					640-700	= 2,0		
(2a)	4,0	1275-1305								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 136,5-139,5 (134,0-142,0)	1140-1150 *	LDA 600	0 bar 127,5-130,5 (125,0-133,0)	100	245,0-285,0 (241,0-289,0) = 19,5 - 21,0 mm RW	0 250	6,7

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel – diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PE 6 P.. RS 372 + RSV.. P5/458 R	0,70	0	12,0-12,1
		0,30	11,4-11,5
		0,26	11,8-11,9
			11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

PE6P120A320RS372 RQ250/1100PA 417 R

Komb.-Nr. 0 401 846 396

supersedes 11.82
company DAF
engine DKS 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9-11,0	19,3 -19,7	0,5(0,9)			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,9	1145-1160	250	6,3	100	min.7,4	850	10,9-11,0
				4,0	1210-1240			250	6,2-6,4	1100	10,8-11,0
				1350	0 - 1,0						
								445-	485 =2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation. At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	-	LDA	0 bar	100	320,0 - 360,0 = 19,5-21,0 mm RW
850	193,0 - 197,0 (190,0 -200,0)		600	133,5-137,5 (130,0-141,0)	250	6,3 mm RW

Checking values in brackets

8.85

C21

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k l

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel – diminution difference
	Gauge pressure bar	Gauge pressure – bar	mm (1)
FE 6 P..RS 37? + RQ .. FA 417 R	0,70		10, 9- 11,0
		0	?,8- 9,9
		0,30	10,6- 10,7
		0,26	10,0- 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C22

En C22

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 k 5
2. Edition

En

PE6P120A 320 RS 372-1 RQ 250/1000 PA 417-3

Komb-Nr. 0 401 846 503

supersedes 7.84
company DAF
engine DKSB
215 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,2+0,1	17,9-18,1	0,5(0,9)			
250	6,6-6,8	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,2	1035-1050	250	6,3	100	min.7,4	850	11,4-11,5
				4,0	1095-1125			250	6,2-6,4	1000	11,3-11,5
				1250	0-1,0			445-485	=2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1035-1050 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel / cm³/1000 strokes mm 7
LDA	0,7 bar	-	LDA	0 bar	100	305,0-345,0
850	179,0-181,0		600	135,5-137,5		(301,0-349,0)
	(176,0-184,0)			(132,5-140,5)		
					250	6,2-6,4 mm RW

Checking values in brackets

8.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure - bar	Control rod travel diminution / difference mm (1)
PE6P..RS 372-1 +RQ..PA 417-3	0,70	0 0,33 0,30	11,2-11,3 10,2-10,3 10,9-11,0 10,4-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 8,3 l 3

1. Edition

En

PE 6 P 100 A 720 RS 373 RSV 250-1200 PO/447 R

Komb.-Nr. 0 401 876 230

supersedes-

company DAF

engine DHU 825
169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	12,7-12,9	0,35(0,6)			
250	7,2-7,4	0,8-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	250	6,8	400	12,5-12,6
	x	= 4,5							300	12,7-13,2
							250	7,2-7,4		
ca. 51	11,3	1240-1250					560-620	= 2,0		
(2a)	4,0	1350-1380								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar	1240-1250*	LDA 500	0 bar	100	195,0-215,0	250	7,3
	127,0-129,0			89,5-92,5		(191,0-219,0)		
	(125,0-131,0)			(87,5-94,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

D1

DA

D. Adjustment Test for Manifold Pressure Compensator DAF 8,3 1 3

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 373 + RSV..P0/447 R	0,70	0 0,22 0,15	12,3-12,4 11,1-11,2 12,0-12,1 11,4-11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D2

En 32

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 30

1. Edition

En

PES 6 P 110 A 720 LS 375
Komb.-Nr. 0 402 046 315

RQ 250/1100 PA 752

supersedes
company MAN
engine D 2566 MTUE

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	13,9-14,2	0,4(0,75)			
250	7,4-7,6	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,1	1145-1160	250	7,5	100	min. 8,9	1100	12,1-12,2
VH =	max. 46 °			4,0	1190-1220			250	7,4-7,6	700	12,1-12,3
				1350	0 - 1,0						

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 139,0-142,0 (136,5-144,5)	-	LDA 500	0,2 bar 126,0-130,0 (123,0-133,0)	100	225,0-245,0 (221,0-249,0)
LDA 700	0,7 bar 132,0-138,0 (129,0-141,0)		LDA 500	0 bar 113,0-116,0 (110,5-118,5)	250	10,0-15,0 (7,5-17,5)

Checking values in brackets

9.85

D3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS375 + RQ.. PA 752	0,70	0 0,20	12,1-12,2 11,5-11,6 11,9-12,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

D4

D4
En

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 SCA 9,0 d 1

1. Edition

En

PE 6 P 110 A 720 RS 3034 T
Komb.-Nr. 0 401 846 709 T

RQV 200-1200 PA 275 R

supersedes -
company Scania
engine DS 804

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC); cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,6+0,1	11,7-11,9	0,5(0,7)			2,4-2,6 (2,2-2,9)
225	5,9-6,1	1,5-1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9 (3a)	100	min.7,4		
ca. 62	11,6	1240-1250					225	5,9-6,1		
	4,0	1380-1410					410-470	=2,0		
	1500	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 600	0,9 bar 117,0-119,0 (115,0-121,0)	1240-1250*	LDA 1200	0,9 bar 123,5-128,5 (122,0-130,0)	100	190,0-240,0	-	-
			LDA 500	0 bar 81,0-85,0 (79,0-97,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

D5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3034 T + RQV..PA 275 R	0,9	0 0,37 0,26	12,6-12,7 11,0-11,1 12,0-12,1 11,3-11,5

Notes

(1) when n = rev/min and gauge pressure bar (maximum full load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 15° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

D6

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 110 A 720 RS 3040 T
Komb.-Nr. 0 401 846 710 T

RQV 250-1050 PA 379 R

supersedes –
company Scania
engine DS 1111

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,4+0,1	17,0-17,2	0,6(0,8)			3,2-3,4 (3,0-3,5)
225	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	–	–	–	ca. 10 (3a)	100 225 310-370=2,0	min.5,9 4,4-4,6		
ca. 62	12,4 4,0 1400	1090-1100 1235-1265 0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 600	0,9 bar 170,0-172,0 (168,0-174,0)	1090-1100*	LDA 1050	0,9 bar 164,5-169,5 (162,0-172,0)	100	240,0-290,0	–	–
			LDA 500	0 bar 128,0-132,0 (126,0-134,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator SCA 11,0 r 9

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure · bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PE 6 P..RS 3040 T + RQV..PA 379 R	0,9	0	13,4-13,5 11,7-11,8
		0,37	12,7-12,8
		0,25	11,8-12,0

Notes

(1) when n rev/min and gauge pressure – bar (· maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 11.2.1985
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 c

1. Edition

En

PES 6 P 110 A 720 RS 3149 RQV 350-1300 PA 772
Komb.-Nr. 9 400 087 334
Values only apply to test nozzle-and-holder assembly 1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes –
company: Ford
engine: 66 TC 121,3 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35 (4,20-4,40) mm (from BDC) Cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,4+0,1	10,8-11,0	0,5(0,9)			
350	7,2-7,4	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 13	100	min.9,0	350	0,6-1,3
ca. 65	12,4	1360-1370					350	7,2-7,4	500	2,3-2,7
	4,0	1500-1530					600-660	=2,0	800	4,0-4,3
	1650	0-1,0							1000	5,0-5,3
						370-440			1300	7,3
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1300	1,0bar 108,0-110,0 (105,0-113,0)	1360-1370*	LDA 600	1,0 bar 106,5-110,5 (104,5-112,5	100	100,0-120,0 (96,0-124,0		
			LDA 500	0 bar 79,5-81,5 (76,5-84,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PES 6 P..RS 3149 + RQV..PA 772	1,0	0 0,45 0,70	13,4-13,5 11,9-12,0 12,2-12,3 13,0-13,2

Notes

(1) when n = rev/min and gauge pressure = bar (maximum full-load control rod travel)

D10

340 En

PE 12 P 120 A 520/4 LS 3828 RQ 1200 PA 660-1

supersedes–

company MAN

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

engine D 2842 LE 559 kW

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 840 728

MAN-Nr. 2-7686

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2-4,3 (4,15-4,35) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 1400	1195-1210 1285-1315 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1245-1250 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1150	200,0-202,0 (197,0-205,0)	-	-	-	-	-

Checking values in brackets

9.85

D11

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D11

PE 12 P 120 A 520/4 LS 3828 RQ 250/1150 PA 739
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes–
company MAN
engine D 2842 LE
Komb.-Nr. 0 401 840 724
MAN-Nr. 2-759?

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2 - 4,3 (4,15-4,35) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	19,5-19,7	0,5 (0,9)			
250	6,9-7,1	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	10,4	1220-1235	250	7,0	100	min.8,5	1150	11,4-11,5
				4,0	1415-1445			250	6,9-7,1	750	11,4-11,6
VH = max. 46°								315-355=2,0			

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation. At 1220-1235 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 1150	1,0 bar 195,0-197,0 (192,0-200,0)	-	LDA 750	1,0 bar 200,0-206,0 (197,0-209,0)	100	190,0-210,0 (186,0-214,0)
			LDA 500	0 bar 119,0-121,0 (116,0-124,0)	250	17,0-23,0 (14,0-26,0)

Checking values in brackets

9.85

D. Adjustment Test for Manifold Pressure Compensator MAN 20,9 s

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PE 12 P..LS 3828 + RQ..PA 739	1,0	0	11,4-11,5	
		0,30	8,9-9,0	
		0,52	9,2-9,3	
			10,7-11,0	

Notes

(1) when n rev/min and gauge pressure = bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 11,0 v 4

2. Edition

En

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528-1

supersedes 9.84
company: SAAB-SCANIA
engine DN 11

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

Komb.-Nr. 0 402 646 815

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,00-5,10 (4,95-5,15) mm (from BDC).

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,6+0,1	15,5-15,7	0,6(0,9)			3,3 ± 0,1 ** (3,0-3,5)

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm.

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	9,6 4,0 850	750-755 773-786 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	155,0-157,0 (152,0-160,0)	-	- High Zul.	- idle speed: Streuung: 4,0 (7,0)	100	240-290 = 20,0-21,0 mm RW

Checking values in brackets

8.85

D14

D14

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 19.9.1984
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 v 3
2. Edition
En

PE 6 P 120 A 720 RS 7004 RQ 900 PA 528-2

supersedes 9.84
company Saab-Scania
engine DN 11

Values only apply to test nozzle-and-holder assembly Komb.-Nr. 0 402 646 814
1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,6+0,1	16,2 - 16,4	0,6(0,9)			3,3±0,1 (3,0-3,5) **

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm.

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	9,6 4,0 1000	900-905 934-948 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
850	162,0-164,0 (159,0-167,0)	-	-	-	100	240,0-290,0 = 20,0-21,0 mm RW
			High idle speed: dispersion 4,0 (7,0)			

Checking values in brackets

8.85

D16

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 19.9.1984
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

supersedes –
company Daimler-Benz
engine OM 442 LA

PE 8 P 120 A 320 LS 7801 RQ 300/900 PA 762-2
Komb.-Nr. 0 402 648 819
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° + 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,0+0,1	19,2-19,5	0,5 (0,9)			
300	5,9-6,1	1,2 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	12,1 4,0 1150	940-955 1020-1050 0-1,5	300	5,9	100 300 365	min. 7,6 5,9-6,1 405= 2,0	900 600 850	12,7-12,9 14,1-14,2 13,1-13,3

Torque-control travel on flyweight assembly dimension a = 1,2 mm

Speed regulation At 940-955 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 900	0,75 bar 192,0-195,0 (189,0-198,0)	-	LDA 600	0,75 bar 209,0-211,0 (206,0-214,0)	100	175,0 - 190,0 (171,0 - 194,0)
			LDA 500	0 bar 153,0-155,0 (150,0-158,0)		

Checking values in brackets

8.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure · bar	Measurement Gauge pressure = bar	Control rod travel · diminution difference mm (1)
PE 8 P .. LS 7801	0		11,2 - 11,4
+ RQ .. PA 762-2		0,30	11,7 - 11,8
		0,45	13,3 - 13,5

Notes

(1) when n rev/min and gauge pressure bar (= maximum full load control rod travel)

D19

D19
En

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9 a 2
En 2. Edition

VE 4/12 F 1150 R 123-2 Overflow temperature 45° C
0 460 424 008
DHK: 1 688 901 016/207 + 3 bar

supersedes 4,85
company: Cummins
engine: 4 BT-390
72 kW / 2300

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	900	2,3 - 2,7	mm		
1.2 Supply-pump pressure	900	4,8 - 5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	86,5 - 87,5	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	24,5 - 30,5	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1230	20,0 - 28,0	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	900	1100
	mm	1,3-2,1 (1,0-2,4)	(1,8-3,2)	3,2-4,0 (2,9-4,3)
2.2 Supply pump	n = rev/min	400	750	1100
	bar (kgf/cm²)	2,3-2,9	4,2-4,8	5,6-6,2
Overflow delivery	n = rev/min	400		1150
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1290	max. 2,0		
	1230		(19,0-29,0)	
	1150	81,5-84,5	(80,0-86,0)	
	900		(84,0-90,0)	
	750	86,0-90,0	(85,0-91,0)	
	400	85,5-89,5	(83,7-91,3)	
switch-off				
Idle stop	450	max. 2,0		
	375		(22,5-32,5)	
	300	49,5-55,5	(47,5-57,5)	
	130	min. 97,0		
	200	max. 85,0		
2.4 Solenoid	cut-in voltage	min. 10 Volt rated voltage 12 V.		

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	
KF	5,1-5,4
MS	1,4-1,6
SVS	4,2
AK	20,2-22,2
BL	13,4-16,8

Observations

Shutoff check ELAB at 375 min⁻¹

D20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 b
6. Edition
En

VE 4/9 F 2300 R 162 Overflow temperature 45° C
0 460 494 153
DHK 1 688 901 022/130 bar
Fuel injection test tubing 6x2x450 mm/1 680 750 073

supersedes 3.85
company: Peugeot
engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,2-3,6	mm		
1.2 Supply-pump pressure	1250	3,9-4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	A 550	2,5-3,5	cm³/1000 strokes		B 2,0 (3,0)
1.5 Full-speed regulation	2400	20,0-26,0	cm³/1000 strokes		
1.6 Start	100	min. 44,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,2-1,0 (0-1,3)	(2,7-4,1)	7,5-8,3 (7,2-8,6)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	700		2250
	cm³/10 s	42-83 (27-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0		
	2500	11,5-17,5	(10,5-18,5)	
	2400		(19,0-27,0)	
	2250	30,0-32,0	(28,8-33,2)	
	2000	30,5-32,5	(29,3-33,7)	
	1250		(27,8-32,2)	
	700	29,5-32,5	(28,0-34,0)	
switch-off	2300	0		
Idle stop	A 550	2,5-3,5		
	B 375	8,5-10,5	(5,5-13,5)	
	C 470	8,0-10,5	(5,5-13,0)	
End stop	200	min. 40,0		
	300	max. 35,0		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
X_K	18,9-20,9
X_L	11,8-15,2

Observations
* Residual delivery setting idle setting (LFG) as per VDT-I-460/135

D21
D21

Testoil-ISO 4113

VE 3/11 F 1200 L 163-3 Overflow temperature 45° C

0 460 413 005

Fuel injection test tubing 1 688 901 020/172 +3 bar

supersedes company: Fiat engine: 8035-05-265

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,2-3,6	mm		
1.2 Supply-pump pressure	800	4,2-4,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	62,5-63,5	cm³/1000 strokes		3,5
1.4 Idle regulation	350	13,0-17,0	cm³/1000 strokes		3,5
1.5 Full-speed regulation	1350	15,0-21,0	cm³/1000 strokes		
1.6 Start	100	min. 90	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100
	mm	0,8-1,4 (0,4-1,8)	(2,7-4,1)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	500	1100	1200
	bar (kgf/cm²)	2,9-3,5	5,5-6,1	6,0-6,6
Overflow delivery	n = rev/min	500		1200
	cm³/10 s	41-83 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1400	max. 2,0		
	1350		(13,5-22,5	
	1300	37,5-44,5	(36,5-44,5)	
	1200	56,0-59,0	(54,8-60,2)	
	800		(60,3-65,7	
	500	59,5-62,5	(57,6-64,4)	
switch-off	1400	0		
Idle stop	420	max. 2,0		
	380	3,0-9,0	(1,5-10,5)	
	350		(10,5-19,5)	
End stop	150	mon. 100		
	250	max. 65		

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,2-5,5
MS	1,5-1,7
SVS	4,0

Observations

D22

D22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

4. Edition

En

Testoil-ISO 4113

VE 4/8 F 2300 R 171 Overflow temperature 45° C

supersedes 10.84
company: Peugeot
engine: XUD 7

0 460 484 010
DHK 1 688 901 022/130 bar
Fuel injection test tubing 6x2x450 mm/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,8- 4,2	mm		
1.2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure *	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	A 550	3,5- 4,5	cm³/1000 strokes		B 2,0(3,0)
1.5 Full-speed regulation	2400	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,2-1,0(0-1,3)	(2,9-4,3)	7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,8-3,4		6,4-7,0
Overflow delivery	n = rev/min	700		2250
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	
	2250	28,0-30,0 (26,7-31,3)	
	2000	29,0-31,0 (27,7-32,3)	
	1250	(27,7-32,3)	
	700	29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550	3,5 - 4,5	
	B 350	8,0 -12,0 (6,0-14,0)	
	C 470	8,0 -12,0 (6,0-14,0)	
End stop	200	min. 44,0	
	300	max. 34,0	

2.4 Solenoid — cut-in voltage min 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
XK	18,9-20,9
X_L	12,2-15,6

Observations
* Residual delivery setting idle setting (LFG) as per VDT-I-460/135

D23

BOSCH

9.85

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,1 f

2. Edition

En

1.85

tested 4-11

VE 4/9 F 2250 R 174
0 460 494 154 Overflow temperature 45° C
DHK: 1 6 88 901 022 / 130+ 3 bar
Fuel injection test tubing 6 x 2 x 450 mm

supersedes
company: PSA-Mahindra
engine: XD 4/90

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm		
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	7,0-11,0	cm³/1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 50	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2200
	mm	1,6-2,4 (1,3-2,7)	(3,3-4,7)	6,4-7,2 (6,1-7,5)
2.2 Supply pump	n = rev/min	400	2200	
	bar (kgf/cm²)	2,0-2,6	7,4-8,0	
Overflow delivery	n = rev/min		2250	
	cm³/10 s		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max. 4,0	
	2400	(10,0-18,0)	
	2350	21,0-27,0 (20,0-28,0)	
	2200	34,0-37,0 (32,8-38,2)	
	2000	33,5-36,5 (32,3-37,7)	
	1500	(28,8-34,2)	
	1000	29,7-32,7 (28,2-34,2)	
	500	30,8-33,8 (29,5-35,3)	
switch-off			
Idle stop	350	(5,0-13,0)	
	400	max. 4,0	
	550	max. 1,0	
End stop	350	min. 40	
	450	min. 44	

2.4 Solenoid — cut-in voltage: min. 10 V; rated voltage 12 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
	1,2-1,4
MS	2,5
SVS	
XK	20,2-22,2
XL	12,0-15,4

Observations

9.85

D24

D24

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 STE 2,3 b 1

1. Edition

En

PES 3 A 75 D 310 RS 1215 RSV 250-900 A7B 719 DL

supersedes –
company Steyr
engine WD 308 S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,45-2,55 (2,40-2,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0+0,1	3,9-4,2	0,4			
200	9,0	1,8-2,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 60	950	16,0	without auxiliary spring	ca. 25	250	6,0	880	0
	950	10,0					850	0,1-0,3
	980	5,2			100	19,0-21,0	350	0,2-0,4
					250	5,7-6,3		
	950	8,4-11,0			400	1,3-3,7		
(2a)	1000	3,1-5,1	with auxiliary spring		550	0-1,0		
	1070	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	61,0-63,0	930-940			100	16,0-16,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E1

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 STE 3,1 b

1. Edition

En

PES 4 A 75 D 410 RS 1215
Komb.-Nr. 0 400 474 152

RSV 250-900 A7B 719 DL

supersedes
company Steyr
engine WD 408 S

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,45-2,55 (2,40-2,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,5+0,1	5,9-6,0	0,25(0,4)			
250	5,4-5,6	1,0-1,6	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	250	5,5	900	11,5-11,6
									500	11,7-11,9
							100	min.19,5	750	11,7-11,9
							250	5,9-6,1		
ca. 60 (2a)	10,5	930-940					405-465	=2,0		
	4,0	965-995								
	1100	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	58,5-59,5 (57,0-61,0)	-	-	-	100	84,0-94,0 (81,0-97,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

E2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E2

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 MWM 5,9 a 2

1. Edition

En

PES 6 A 80 D 320 RS 1271 RSV 350-1400 A 2 B 2196 R

Komb.-Nr. 9 400 085 238

supersedes –
company MWM
engine D 229-6
127,0 kW

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1380	9,5+0,1	5,3 - 5,4	0,25(0,4)			
350	6,9-7,1	0,8 - 1,1	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 5,5		-	-	-	ca. 21	350	6,5	1380	9,5- 9,6
							100	min.19,0	500	10,9-11,0
							350	6,9-7,1	800	10,7-10,9
ca.54	8,5	1420-1430					640 - 700	=2,0	1100	10,0-10,3
(2a)	4,0	1470-1500					850	max. 1,0		
	1650	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational speed limiter	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1380	52,5 - 53,5 (51,0 - 55,0)	1420-1430*	800	54,0 - 56,0 (52,0 - 58,0)	100	19,0-21,0 mm RW	-	-
500	52,0 - 54,0 (50,0 - 56,0)		1100	54,5 - 56,5 (52,5 - 58,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E3

E3

Testoil-ISO 4113

PE6A90D410RS2124 RQ 450/1250 AR 812

supersedes 1.83
company Daimler-Benz
engine OM 360
141 kW (192 PS)

Komb.-Nr. 0 400 646 229

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,2±0,1	8,6 - 8,7	0,3(0,45)			
450	5,9-6,1	1,2-1,8	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,2	1295-1310	450	6,0	100	min. 7,5	-	-
				4,0	1345-1375			450	5,9-6,1		
								600	0 - 1,0		
								500-540	=2,0		

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation At 1295-1310 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	86,0 - 87,0 (84,0 - 89,0)	800	800	80,0 - 83,0 (78,0 - 85,0)	100	115,0-125,0 (112,0-128,0) = min. 16,0 mm RW

Checking values in brackets

7.85

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 8,7 c 3
3. Edition

En

PE 6 A 90 D 410 RS 2124 X RQ 300/1275 AB 658 DL
Komb.-Nr. 0 400 646 151

supersedes 11.84
company Daimler-Benz
engine OM 360
125 kW (170 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	7,7 - 7,8	0,3(0,45)			
300	6,1-6,3	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	8,3 4,0	1295-1310 1345-1375	300	5,0	100 300 350-390 475	min. 6,5 4,9-5,1 = 2,0 max. 1,0	1250 500 850 1040	9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1250	77,0-78,0 (75,0-80,0)	450	500 800	69,0-72,0 (67,0-74,0) 77,0-80,0 (75,0-82,0)	100	min. 16,0 mm RW

Checking values in brackets

7.85

E5

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MAN 9,7 m 1
2. Edition
En

PES 6 A 95 D 420 LS2328 RQ 200/1100 AB782DR

supersedes 3.76
company MAN
engine D 2356 HMYU* (220 PS)*

* All D 2356 HMXU engines must, when repairing, be changed to D 2356 HMYU in accordance with test specifications below.

Komb.-Nr. 0 400 846 239

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,5			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1120	15,6-16,0	550	0	100	6,6-8,1	-	-
				1150	9,0-14,2			200	5,4-7,3		
				1180	0 - 10			300	3,3-5,3		
				1240	0			450	0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	125,5 - 127,5 (123,5-129,5)	500	300	125,0 - 128,0 (123,0-130,0)	100	14,0-14,4 mm RW
			500	max. 122,5 (max. 124,5)	200	6,5 mm

Checking values in brackets

3.85

E6

Test Specifications Fuel Injection Pumps ① and Governors

PES 5 A 95 D 410 RS 2417 RQV 300-1250 AB 1211 L
Komb.-Nr. 0 400 845 081

supersedes –
company: KHD
engine F 5 L 413 FR
88 kW/2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,0+0,1	9,9-10,1	0,35(0,6)			
300	6,4-6,6	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca. 18°	300	5,7-5,9	250	1,0-1,2
ca. 54	9,0	1290-1300							500	3,2-3,5
	4,5	1350-1380							1000	6,2-6,4
	1500	0-1,0							1250	8,3
						365-480 ③a				

Torque control travel a = 0,20 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1250	99,0-101,0 (97,0-103,0)	1290-1300*	600	91,5-94,5 (89,0-97,0)	100	120,0-130,0 =14,2-14,6 mm RW	1250	10,0+0,1
							600	10,2+0,1
							715	10,1-0,2
							765	10,1+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.95

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

E7

Test Specifications Fuel Injection Pumps and Governors

PES 4 A 90 D 410 RS 2442 RQ 275/1300 AB994L
Komb.-Nr. 0 400 844 070
Control switch must light up at n = 1480-1490

supersedes 10.77
company OM-Brescia
engine C03/130
81 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,1	8,1 - 8,2	0,2(0,35)			
275	8,3-8,5	1,5 - 2,1	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
900	15,6-16,4	900	16,0	10,7	1345-1360	275	8,5	100	min.10,2	1300	11,7-11,8
				4,0	1470-1500			275	8,6-8,8	650	12,2-12,4
				1600	0 - 1,0			660-760	=2,0		

Torque control travel on flyweight assembly dimension a · mm

Speed regulation 1345-1360 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes 7
1300	80,5 - 81,5 (78,5 - 83,5)	-	650	79,5 - 82,5 (77,5 - 84,5)	100	120,0-133,0 (117,0-133,0) = 16,9-17,5 mm RW

Checking values in brackets

4.85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

E8

Test Specifications Fuel Injection Pumps ① and Governors

PE 8 A 95 D 410 LS 2451 RQV 300-1150 AB 1045-1 L

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° ± 0,5° (± 0,75°)

Komb.-Nr. 0 400 648 143

supersedes–
company TAM
engine F 8 L 413 F
173 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-No. 413

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,3-9,4	8,6-8,8	0,3(0,6)			
300	5,9-6,1	1,4-2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 16	100 300	min.7,5 5,9-6,1	200 600 850 1200	0,7-0,9 3,9-4,1 6,9-7,1 8,4
ca. 46	8,3 4,0 1350	1190-1200 1225-1255 0-1,0				330-445 ③a				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1150	86,0-88,0 (84,0-90,0)	1190-1200*	1000	86,5-89,5 (84,5-91,5)	100	116,5-126,5 (113,5-129,5)	1150 500 840 1000	9,3+0,1 9,7+0,1 9,6+0,2 9,4+0,2
			700	86,5-89,5 (84,5-91,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MAN 11,1 g 1
2. Edition
En

Testcil-ISO 4113

PES 6 A 95 D 410 LS2485Z RQ 250/1100 AB839DL (1)
LS2485Y RQ 250/1100 AB839DL (2)
LS2485Y RQ 250/1100 AB965DL (3)

supersedes 8.77
company: MAN
engine D 2566 ..
MSFV (1- 220 PS)
MFO/MFOR (2- 220 PS)
MFO/MFOR (3- 200 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery Z, Y + 839DL cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery Y + 965DL cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,1	11,2 - 11,4	0,3(0,6)	10,0 (+0,1)	10,1 - 10,3	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Z + 839DL (1)

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,2	1145-1160	250	6,0	100	min. 7,5	1100	11,2-11,3
								250	5,9-6,1		
				4,0	1175-1205			340-400	= 2,0	800	11,5-11,6
				1300	0 - 1,0			500	max.1,0	500	11,5-11,7

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	112,0 - 114,0 (110,0 - 116,0	-	800	114,5 - 117,5 (112,5 - 119,5)	100	114,0-120,0 (111,0-123,0)
					250	6,0
			500	111,0 - 114,0 (109,0 - 116,0)		

Checking values in brackets

4.85

B. Governor Settings

Y + 839DL (2)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,2	1145-1160	250	6,0	100	min. 7,5	1100	11,2-11,3
								250	5,9-6,1		
1100	Breakway			4,0	1175-1205			340-500	400 = 2,0	800	11,5-11,6
1300	0 - 1								0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7 mm RW
1100	112,5 - 114,5 (110,5 - 116,5)		800	114,5 - 117,5 (112,5 - 119,5)	100	13,0-13,6
					250	6,0
			500	110,5 - 113,5 (108,5 - 115,5)		

Checking values in brackets

B. Governor Settings

Y + 965DL (3)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	9,0	1145-1160	250	6,0	100	min.7,9	-	-
				4,0	1180-1210			250	6,3-6,5		
1100	Breakway							360-420	= 2,0		
1300	0 - 1							500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7 mm RW
1100	99,5 - 101,5 (97,5 - 103,5)		500	86,5 - 91,5 (84,5 - 93,5)	100	13,6-14,2
					250	6,0

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 d
4. Edition
En

PES 5 A 95 D 410 LS2488 RQ 250/1100 AB839D (1)
LS2488Y RQ 250/1100 AB839D (2)

supersedes 5.84
company: M A N
engine: D 2565 M/MF
(1) 141 kW/2200 min^{-1}
(2) 123,5 kW/2200 min^{-1}

Komb.-Nr. 0 400 845 028 (1) MAN-Nr. 7724
0 400 845 036 (2) MAN-Nr. 7844

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,1	11,8 - 12,0	0,3(0,6)	9,9+0,1	10,0 - 10,3	
250	5,9-6,1	1,4 - 1,9	0,3 (0,5)	5,9-6,1	1,1 - 1,7	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

(1)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6 -16,4	600	16,0	1100	15,1-15,4	540	0	100	6,9-8,1	900	15,8-16,0
				1150	9,0-14,0			200	5,6-7,6	1030	15,3-15,5
				1200	0 - 7,2			300	3,3-5,5		
				1250	0 - 1,5			500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation Δ 1145 - 1160 = 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	117,5 - 119,5 (115,5 - 121,5)		800	116,5 - 120,5 (114,5 - 122,5)	100	116,5 - 126,5 = 13,7-14,3 mm RW
			500	114,5 - 108,5 (112,5 - 120,5)		

./.

Checking values in brackets

4.85

E12

B. Governor Settings

RQ.. 839DL + 2488Y

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	1100 1150 1200 1250	15,1-15,4 9,0-14,0 0 - 7,2 0 - 1,5	540	0	100 200 300 500	6,9-8,1 5,6-7,6 3,3-5,5 0 - 1	900 1030	15,8-16,0 15,3-15,5

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1145 - 1160 =

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7
1100	99,0 - 101,0 (97,0 - 103,0)		800 500	100,5 - 104,5 (98,5 - 106,5) 95,0 - 99,0 (93,0 - 101,0)	100 250	119,0 - 124,0 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7

Checking values in brackets

En

E13

E 13

PES 6 A 95 D 410 LS 2489 RQ 250/1100 AB 965 DL
Komb.-Nr. 0 400 846 377

supersedes 2.76
company: MAN
engine D 2566 MXUM/UH 213 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	12,7-12,9	0,3 (0,6)			
250	6,0-6,2	0,9-1,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,2 4,0	1145-1160 1185-1215	250	6,0	100 250 330-370	min. 7,5 5,9-6,1 = 2,0	1100 500	12,2-12,3 12,2-12,4

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1100	126,5-128,5 (124,5-130,5)	-	500	max. 121,5 (max. 123,5)	100	116,5-126,5 (113,5-129,5)

Checking values in brackets

11.85

E14

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 i 1

1. Edition

En

PES 6 A 95 D 410 LS 2489 Z RQ 250/1100 AB 965 D

supersedes...

company MAN

engine D 2566 MUH/M
155 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,1+0,1	10,3-10,5	0,3 (0,6)			
250	5,9-6,1	1,2-1,8	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	1140 1180 1220 1260	15,6-16,0 6,6-12,8 0-7,0 0	560	0	150 250 350 460	7,0-8,1 5,3-7,5 2,4-4,6 0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	101,5-103,5 (99,5-105,5)	-	500	88,5-92,5 (86,5-94,5)	100 250	111,0-119,0 6,0 mm RW

Checking values in brackets

11.85

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 4,1 c 6

1. Edition

PES 4 A 80 D 410 RS 2523 RSV 325-1075 A1B 1111 DL En

Komb.-Nr. 9 400 093 229

supersedes

company Deutz Argentinien

engine F 4 L 913

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1075	10,2+0,1	6,0-6,1	0,25 (0,4)			
325	6,4-6,6	0,6-0,9	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 32	325	6,0	1075	10,2-10,3
	x = 6,25								500	11,0-11,1
							100	min. 19,0	750	10,5-10,8
ca. 65	9,2	1115-1125					325	6,4-6,6		
(2a)	4,0	1160-1190					510-570	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1075	60,0-61,0 (58,5-62,5)	1115-1125*	500	60,0-62,0 (58,0-64,0)	100	19,0-21,0 mm RW	-	-
			750	58,0-60,0 (56,0-62,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

EA6

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2525 RQ 225/1200 AB 1007 L

supersedes 1.85
company DAF
engine DHR 825

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8 - 11,0	0,35(0,6)			
225	5,7-5,9	0,7 -1,2	0,35(0,5)			

Port closing difference between control-rod travel 9 mm and max. 3 - 4° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	min.7,2	1000	12,6-12,7
										1200	12,5-12,7
VH =	max. 46°			4,0	1315-1345			225	5,7-5,9		
				1390	0 - 1,0			340-380	= 2,0		
								450	max. 1,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation Δ 1230-1245 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1000	0,7 bar 109,0 - 110,0 (107,0 - 112,0)		LDA 600	0 bar 85,5 - 86,5 (83,5 - 88,5)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW

Checking values in brackets

10.85

E17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 A ..RS 2525 + ..AB 1007 L	0,7	0,30	12,6 - 12,7
		0,26	12,3 - 12,4
		0	11,7 - 12,0
			11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 k 7

1. Edition

En

PE 6 A 95 D 410 RS 2525 RSV 250-1200 A5C 2198-3 L
Komb.-Nr. 0 400 676 185

supersedes
company DAF
engine DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,1	7,3-7,5	0,35(0,6)			
250	6,0-6,2	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,6	1200	10,4-10,5
	x = 4,3								500	11,2-11,3
							100	min.19,5	800	11,1-11,2
ca. 58	9,4	1240-1250					250	6,0-6,2	940	10,7-11,0
(2a)	4,0	1320-1350					655-715	=2,0		
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	73,0-75,0 (71,0-77,0)		800	74,5-77,5 (72,0-80,0)	100	120,0-130 (117,0-133,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E19

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 5,1 d 1

1. Edition

En

PES 5 A 80 D 410 RS 2526 RSV 325-1075 A1B 1111 DL
Komb.-Nr. 9 400 093 228
1-3-5-4-2- je 72° ± 0,5° (± 0,75°)

supersedes -
company Deutz Argentinien
engine F 5 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1075	9,4-9,5	5,3-5,4	0,25 (0,4)			
325	6,4-6,6	0,6- 0,9	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 6,25	-	-	-	ca. 32	325	6,0	1075	9,4-9,5
							100	min.19,0	500	11,2-11,3
ca. 65	8,4	1115-1125					325	6,4-6,6	800	10,4-10,7
(2a)	4,0	1150-1180					510-570	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1075	52,5-53,5 (50,5-55,5)	1115-1125*	500	61,5-63,5 (59,5-65,5)	100	19,0-21,0 mm RW	-	-
			800	57,0-59,0 (55,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E20

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 5,1 e

1. Edition

En

PES 5 A 80 D 410 RS 2526 RS 325/1400 A0B 2212 L

supersedes-

company Deutz Argentinien

engine F 5 L 913

Komb.-Nr. 9 400 085 255

1-3-5-4-2 je 72° ± 0,5 ° (± 0,75 °)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1400	11,5±0,1	6,6-6,7	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	FH ca.28	325	8,5	1400	11,5-11,6
	X = 2,0						280	8,8-9,6	500	12,2-12,3
VHca.55	10,5	1440-1450					420	5,6-6,4	1100	11,8-12,1
FHmax. (2a)	4,0	1500-1530					550	max. 4,4		
	1600	0,3-1,7					1300	max. 3,8		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	65,0-66,5 (64,0-68,0)	1440-1450*	500	55,5-57,5 (53,5-59,5)	100	19,0-21,0 mm RW	-	-
			1100	62,0-64,0 (60,0-66,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E21

E2A

Test Specifications Fuel Injection Pumps (1A) and Governors

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5C 2203 R

Komb.-Nr. 0 400 676 180

supersedes

company DAF

engine DT 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,2-7,3	0,3 (0,45)			
250	5,9-6,1	0,9-1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,5	1000	10,8-10,9
	x =	3,3							400	11,2-11,3
							100	min.19,5	300	11,2-11,7
ca. 54	9,8	1240-1250					250	5,9-6,1		
(2a)	4,0	1310-1340					585-645	=2,0		
	1490	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 71,5-72,5 (69,5-74,5)	1240-1250*	LDA 600	0 bar 51,5-53,5 (49,0-56,0)	100	140,0-150,0 (137,0-153,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E22

E22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 A..RS 2547 + A5C 2203 R	0,7	0,25 0,21 0	10,8-10,9 10,6-10,7 10,2-10,5 10,0-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 d 3

1. Edition

En

PES 6 A 80 D 410 RS 2527
Komb.-Nr. 9 400 093 226

RSV 325-1150 A1B 1111 L

supersedes–
company Deutz Argentinien
engine F 6 L 913

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1150	9,3-9,4	5,4-5,5	0,25 (0,4)			
325	6,4-6,6	0,6-0,9	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 32	325	6,0	1150	9,3-9,4
	x = 4,5						100	min.19,0	500	11,1-11,2
ca. 60	8,3	1190-1200					325	6,4-6,6	800	10,2-10,5
(2a)	4,0	1215-1245					510-570	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	54,0-55,0 (52,5-56,5)	1190-1200*	500	61,5-63,5 (59,5-65,5)	100	19,0-21,0 mm RW	-	-
			800	56,5-58,5 (54,5-60,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E24

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 HAN 10,8 h 1

1. Edition

En

PE 6 A 95 D 320 RS 2557
Komb.-Nr. 0 400 676 186

RSV 400-1100 A8C 1117-1 R

supersedes

company Hanomag
engine D 963 N
110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,9-10,0	8,2-8,4	0,35(0,6)			
400	8,0-8,2	3,1-3,9	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 21	400	7,6	1100	9,9-10,0
	x = 3,75								500	10,7-10,8
							100	min. 19,5	865	10,3-10,5
ca. 49	8,9	1140-1150					400	8,0-8,2		
(2a)	4,0	1200-1230					570-630	= 2,0		
	1365	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
100	82,0-84,0 (80,0-86,0)	1140-1150*	400	31,0-39,0 (28,5-41,5)	100	122,0-132,0 (119,0-135,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F1

FA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 12
1. Edition
En

PES 4 A 90 D 410 RS 2570 RQV 300-1400 AB 1146-3 L
Komb.-Nr. 9 400 085 230

supersedes-
company: Daimler-Benz
engine: OM 314 A
81,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,8+0,1	8,0-8,1	0,3(0.5)			
300	8,9-9,1	1,3-1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 16	100	min.10,5	300	1,2-1,4
							300	8,9-9,1	650	3,3-3,6
ca. 64	11,8	1440-1450					740-800	= 2,0	1000	5,4-5,7
	4,0	1585-1615				400-470			1485	8,6
	1800	0-1,0				(3a)				

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,5 bar	1440-1450*	LDA	0,5 bar	100	73,0-83,0	1400	12,8+0,1
1400	80,0-81,0		500	74,0-76,0		(70,0-86,0)	500	13,8+0,1
	(78,0-83,0)			(72,0-78.0)			1050	13,5+0,2
			LDA	0 bar			1225	12,9+0,3
			500	56,5-58,5				
				(54,5-60,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 4 A..RS 2570 + AB 1146-3 L	0,5		13,8-13,9
		0	12,1-12,2
		0,33	13,4-13,5
		0,23	12,4-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 n 5
1. Edition
En

PE 6 A 95 D 410 RS 2575 RSV 250-1200 A 5 C 2198-1 L
Komb.-Nr. 0 400 676 175

supersedes
company DAF
engine DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 7,5 - 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7		ca.24	250	5,6	1200	10,4-10,5
	X = 5,0				100	min.19,5	500	11,2-11,3
ca.58	9,4	1240-1250			250	6,0 - 6,2	800	11,1-11,2
(2a)	4,0	1340-1370			635 -	695 = 2,0	940	10,7-11,0
	1505	0,3-1,4						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	73,0 - 75,0 (71,0 - 77,0)	1240-1250*	800	74,5 - 77,5 (72,0 - 80,0)	100	135,0-145,0 (132,0-148,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

F4

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1146-2 L

Komb.-Nr. 9 400 085 229

supersedes
company: Daimler-Benz
engine OM 352 A
127 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,8+0,1	8,1-8,2	0,3(0,5)			
300	8,9-9,1	1,3-1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 16	100	min.10,5	300	1,2-1,4
							300	8,9-9,1	650	3,3-3,6
ca. 64	11,8	1440-1450					740-800=2,0		1000	5,4-5,7
	4,0	1585-1615							1485	8,6
	1800	0-1,0								

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 81,0-82,0 (79,0-84,0)	1440-1450*	LDA 500	0,5 bar 76,5-78,5 (73,5-79,5)	100	73,0-83,0 (70,0-86,0) =14,8-15,2 mm RW	1400	12,8+0,1
							500	13,8+0,1
							1050	13,5+0,2
			LDA 500	0 bar 62,0-64,0 (60,0-66,0)			1225	12,9+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

F5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PES 6 A..RS 2596 +RQV..AB 1146-2 L	0,50	0 0,33 0,23	13,8-13,9 12,5-12,6 13,5-13,6 12,5-12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F6

En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 v 14
1. Edition
En

PES 6 A 90 D 410 RS 2596 RSV 350-1200 AOC 1148 L
Komb.-Nr. 0 400 876 310

supersedes
company Daimler-Benz
engine OM 352 A
110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1180	12,2+0,1	7,4-7,5	0,3(0,45)			
350	8,6-8,7	1,2-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	lose	350	8,6	1180	12,2+0,1
	x = 5,0						100	min. 19,0	725	13,5+0,1
							350	8,6-8,7	900	12,9+0,2
ca. 62	11,2	1220-1230					510-570	= 2,0		
(2a)	4,0	1335-1365								
	1460	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1200	0,9 bar 74,0-75,0 (72,0-77,0)	1220-1230*	LDA 900	0,9 bar 74,0-78,0 (71,5-80,5)	100	78,0-88,0 (75,0-91,0) = 16,0-16,4 mm RW	-	-
LDA 725	0,9 bar 79,0-81,0 (76,5-83,5)		LDA 500	0 bar 51,0-53,0 (49,0-55,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

F7

F7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS2596 with..AOC1148 L	0,90	0 0,45 0.24	13,5-13,6 11,5-11,6 12,6-12,7 12,0-12,2

Notes:
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,75 - 0,85 bar
Unlocking at	0,25 - 0,35 bar

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1196 L

Komb.-Nr. 9 400 085 222

supersedes –

company: Daimler-Benz

engine OM 352 A
124 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,0+0,1	7,8 - 7,9	0,3 (0,5)			
300	9,4-9,6	1,3 - 1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑩ ② 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 30	100	min.11,0	300	0,9-1,3
							300	9,4-9,6	500	2,4-2,6
ca. 63	11,4	1440-1450					610	-670=2,0	800	4,3-4,5
	4,0	1570-1600							1100	5,7-5,9
	1750	0 - 1,0							1500	8,6

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑫b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 71,5-72,5 (69,5-74,5)	1440-1450*	LDA 600	0,7 bar 71,0-73,0 (68,5-75,5)	100	73,0 - 83,0 =15,6- 16,0 mm RW	1400	12,4-12,5
							600	13,8-13,9
LDA 900	0,7 bar 72,0-74,0 (69,5-76,5)		LDA 500	0,7 bar 56,0-57,0 (54,0-59,0)			900	13,3-13,5
							1100	12,8-13,1

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2596 +RQV .. AB 1196 L	0,7	0 0,3 0,24	13,8 - 13,9 12,6 - 12,7 13,5 - 13,6 12,8 - 13,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F10

En

FAO

Test Specifications Fuel Injection Pumps ① and Governors

En

PE 8 A 95 D410 LS 2608 RQV 300-1250 AB 1195 L

Komb.-Nr. 0 400 648 141

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° ± 0,5° (± 0,75°)

supersedes _

company KHD

engine F 8 L 413 F
188 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,1	9,2 - 9,4	0,35(0,6)			
300	6,4-6,6	0,8 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca. 15	100	min. 8,1	300	1,2-1,3
							300	6,5-6,7	500	2,6-2,9
ca. 46	9,4	1290-1300							1000	5,4-5,6
	4,5	1365-1395				300-450			1300	7,7-7,8
	1500	0,3-1,0				③a			1380	8,7

Torque control travel a = 0,45 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1250	91,5-93,5 (89,5-95,5)	1290-1300 *	750	93,0-96,0 (90,5-98,5)	100	116,5-126,5 (113,5-129,5)	1250	10,4+0,1
							500	10,8+0,1
							845	10,6+0,2
							950	10,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

FAR

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 VAL 3,3 a 1

2. Edition

En

PES 3 A 95 D 320 RS 2655 RSV 325-1150 A 2 C 2178-1 R

Komb.-Nr. 0 400 873 032

1-2-3 je 120° ± 0,5° (± 0,75°)

supersedes 7.85

company Valmet

engine J 11 D 56

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing difference between control-rod travel 9 mm and max. 4,5-5,5° camshaft

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1130	10,4+0,1	8,9-9,1	0,35(0,6)			
325	6,5-6,7	2,2-2,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 27	325	6,1	1130	10,4-10,5
	x = 5,0								500	11,8-11,9
							325	6,5-6,7	915	11,2-11,4
ca. 54	9,4	1170-1180					470-530	= 2,0		
(2a)	4,0	1235-1265								
	1405	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40°C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1130	88,5-90,5 (86,5-92,5)	1170-1190*	500	94,5-96,5 (92,0-99,0)	100	190,0-200 (187,0-203,0) =19,5-21,0 mm RW	0 -	-
					325	22,0-28,0 (19,5-30,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

F12

F12

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 3,1 b
3. Edition

En

PES 3 A 90 D 320/3 RS 2658 RSV 325-1500 A2B 505-2 R
Komb.-Nr. 0 400 863 008 A2C 505-2 R

1 - 2 - 3 je 120° ± 0,5° (± 0,75°)

supersedes 5.84
company MWM
engine D 226 B-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC) RW = 9,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	11,2+0,1	9,0-9,1	0,3(0,45)			
325	7,0-7,2	0,8-1,4	0,25(0,45)			
Port closing difference = 3,5-4,5 mm between control-rod travel 9 mm and control-rod travel 12 mm						

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.24	325	6,6	-	-
	x = 4,75						100	min.19,5		
ca.63	9,5	1540-1550					325	7,0-7,2		
(2a)	4,0	1615-1645					465 - 525	=2,0		
	1780	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5-90,5 (87,5-92,5)	1540-1550*	-	-	100	131,0-141,0 (128,0-144,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F13

FA3

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MWM 6,2 e
3. Edition
En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1500 A 2 B 505 - 2 R
A 2 C 505 - 2R

supersedes 5.84
company MWM
engine D 226-6

Komb.-Nr. 0 400 866 112

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	11,2+0,1	9,0 - 9,1	0,3 (0,5)			
325	7,0-7,2	0,8 - 1,4	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	325	6,6	-	-
	x = 4,75						100	min. 19,5		
ca. 63	9,5	1540-1550					325	7,0-7,2		
(2a)	4,0	1615-1645					465 -	525=2,0		
	1780	0,3-1,								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 6,2 e 3
2. Edition
En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1200 AOC 2182-1R
Komb.-Nr. 0 400 866 114

supersedes 9.84
company MWM
engine TD 226 B-6

Test data ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,0+0,1	9,9-10,0	0,3(0,45)			
325	6,9-7,1	0,8-1,4	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 X = 3,25	-	-	-	ca.18	325	6,5	1200	12,0-12,1
							100	min.19,5	500	12,5-12,6
ca.45	11,0	1240-1250					325	6,9-7,1	1125	12,3-12,5
(2a)	4.0	1300-1330					495-555	= 2,0		
	1465	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 99,0-100,0 (97,0-102,0)	1240-1250*	LDA 500	0 bar 62,0-63,0 (60,0-65,0)	100	135,0-145,0 (132,0-148,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

F15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6A..RS2660	0,70		12,5-12,6
+RSV..A0C2182-1R		0	10,2-10,3
		0,46	12,0-12,1
		0,21	10,8-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 5,6 a

2. Edition

En

PES 4 A 95 D 410 RS 2685 RSV 400-1000 A 1 C 2187 L

Komb.-Nr. 0 400 874 238

supersedes 8.84
company Liebherr
engine D 904 NA
70 kW

Testbench 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	x = 2,5						100	min.19,5	550	9,7-9,9
							400	6,1-6,3	430	10,9-11,5
ca. 50 (2a)	8,7	1040-1050					455-515	2,0		
	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	69,0-72,0 (66,5-74,5)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 8,4 a

2. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L
Komb.-Nr. 0 400 876 322

supersedes 8.84
company Liebherr
engine D 906 NA
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.23	400	5,7	1000	9,7-9,8
	x =	2,5					100	min.19,5	550	9,7-9,9
ca. 50 (2a)	8,7	1040-1050					400	6,1-6,3	430	10,9-11,5
	4,0	1065-1095					455-515	= 2,0		
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	81,0-83,0 (79,0-85,0)	1040-1050*	600	70,0-73,0 (67,5-75,5)	100	120,0-130,0 - (117,0-133,0)	-	-
					400	10,0-16,0 (7,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.82

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 o 3

1. Edition

En

PES 6 A 95 D 320 RS 2693 RSV 300-1300 AOC 2195 R
Komb.-Nr. 0 400 876 327

supersedes
company DAF
DNT 620
engine 130,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 7,5 - 10,5 mm ; cyl. 1;

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,5+0,1	7,6-7,8	0,35(0,45)			
300	6,1-6,3	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	300	5,7	1290	11,0-11,1
	x = 5,0								500	11,6-11,7
							100	min.19,5	1015	11,3-11,5
ca. 55	10,0	1330-1340					300	6,1-6,3		
(2a)	4,0	1410-1440					560-620	=2,0		
	1570	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	130,0-140	0 -	-
850	76,0-78,0		1290	75,5-78,5		(127,0-143,0)		
	(74,0-80,0)			(73,0-81,0)				
					300	7,0-11,0		
			LDA	0 bar		(4,5-13,5)		
			600	65,0-67,0				
				(63,0-69,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

F19

D. Adjustment Test for Manifold Pressure Compensator

DAF 6,2 o 3

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A..RS 2693 with AOC 2195 R	0,7	0 0,25	11,5-11,6 11,2-11,4 11,4-11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 6,0 c 1
1. Edition
En

PES 6 A 90 D 410 RS 2710 RSV 350-750 A 0 C 2006-3 L

Komb.-Nr. 0 400 876 334

supersedes –
company Daimler-Benz
engine OM 366
54,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	11,4+0,1	5,4 - 5,5	0,3 (0,45)			
350	8,2-8,4	0,6 - 1,2	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	350	8,3	-	-
	x =						100	min.19,5		
ca.32	10,4	750-755					350	8,2-8,4		
(2a)	4,0	775-788					380 -	420=2,0**		
	900	0,3-1,4								

The numbers denote the sequence of the tests

** Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40 C (104° F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
700	53,5 - 54,5 (51,5 - 56,5)	750-755 *	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

F21

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DEE 7,6 d
2. Edition
En

US-PES 6 A 100 D 410 RS 3036 US-RSV 600-1100 A 2 B 2079L supersedes 9.83

Komb.-Nr. 9 400 230 020

company John Deere
engine 6466 T
132 kW

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,8+0,1	10,9-11,1	0,3(0,6)			
600	5,2-5,4	1,2-1,6	0,3(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	600	4,7	1100 750	10,8-10,9 11,6-11,7
							100	min.19,0		
ca.42 (2a)	9,8 4,0 1285	1145-1155 1185-1215 0,3-1,7					600 630-690 800	5,1-5,3 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0.8 bar 109,0-111,0 (105,0-114,0)	1145-1155*	LDA 750 LDA 500	0,8 bar 116,5-119,5 (115,0-121,0) 0 bar 68,5-71,5 (65,0-73,0)	100 High 1200	170,0-195 Idle speed 19,0-29,0	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
US-PES6A..RS3036	0,43		11,5 - 11,6
+ US-RSV..A2B2079L		0,19	9,8 - 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 6,11k
1. Edition
En

PES 6 MW 100/320 RS 1132
RSV 325-1250 MW 2 A 308-3
0 403 476 042

supersedes
company Volvo Penta
engine TD 61 APP
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	10,8-10,9	8,5-8,7	0,35(0,6)			
325	6,1-6,2	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 24	325	6,1-6,2		
							100	min.19,0		
ca. 54 (2a)	1290-1300=9,8 1340-1370=4,0 1450=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 °C (104 °F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	85,0-87,0 (83,0-89,0)				100	140-160 (137-163)		
					325	12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

F24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 I 1
3. Edition
En

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 18
Komb.-Nr. 0 400 074 961 Sales model 0 400 074 958
1 - 3 - 4 - 2
0 - 90-180-270

supersedes 1.85
company Daimler-Benz
engine OM 616
53 kW (72) PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	$13,4^{+0,1}$	3,9-4,0	0,25(0,30)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
9-13 (1)	min.11,0	250	50 (7)	12.5-12,7	2200	(12)	100	min. 20,1
(2)	max.10,5	300	(8)	8,2-8,6	2500	(13)	1800	12,8-13,0
(3)	6,0-6,2	375	(9)	-	-	(14)	1000	13,4-13,5
(4)	4,8-5,0	450 **	(10)	0-1,0	2950			
(5)	-	-						
	2,0	720-820	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0
					2500	23,0-27,0 (22,0-28,0)	1,5 (15) 2,5 See 3,0 Point 8 a (16)

Checking values in brackets

*ca. 4,2 less control rod travel than in Column 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{0}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{0}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 2
4. Edition
En

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 16
Komb.-Nr. 0 400 075 987 Sales model 0 400 075 988
1 - 2 - 4 - 5 - 3
0 - 72-144-216-288 ± 0,50 (0,75)

supersedes 1.85
company Daimler-Benz
engine OM 617
65 kW (88 PS)
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) Control rod travel 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (compensating valve) mm 6
1000	13,4+0,1	3,9-4,0	0,25(0.3)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: Rotational speed rev/min 8	Control rod travel mm 9
9-13 (1)	min.10,0	250	50 (7)	12.5-12,7	2200	(12) 100	min. 20,1
(2)	max. 9,5	300	(8)	8,6-9,0	2500	(13) 1800	13,0-13,2
(3)	6,0-6,2	350	(9)	-	-	(14) 1000	13,4-13,5
(4)	4,6-4,8	450 **	(10)	0-1,0	2950		
(5)	- 2,0	- 780-820	(11)			(6) Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery (19) Test oil temp 40°C (104 F) rev/min 1	cm³/1000 strokes 2	Full load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0
					2500	23,0-27,0 (22,0-28,0)	1,5 (15) 2,5 See 3,0 Point 8 a (16)

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

1. ** Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,5-4,9mm).

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 ::
En
1. Edition

Test No. 0 400 076 994

PES 6 M 55 C 320 RS 156
RSF 315/2300 M 59-3
0 400 076 994
1- 5- 3- 6- 2- 4
0-60-120-180-240-300

supersedes_
company Daimler Benz
engine OM 603
80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
290	5,4-5,6	0,55-0,65	0,1(0,15)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min.7,0	220	50 (7)	10,6-10,8	2200	(12)	100	min. 20,1
(2)	5,4-5,6	290	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
(3)	4,2-4,4	360**	(9)	-		(14)	1000	11,3-11,4
(4)	-		(10)	0-1,0	2950			
(5)	1,5	620-720	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					290	5,5-6,5 (5,0-9,5)	1,0 (1,5)
			1000	31,5-32,5 (30,5-33,5)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G5

65

1. ** Supplementary idle spring inspection, setting at n = 360 1/min control-rod travel (4.1-4.5 mm).

2. Set idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Check supplementary idle spring cutoff

   Control-lever position 49°, after switch-over point (of starting curve) up to 1000 1/min max. 0.2 mm control-rod travel deduction allowable.
   Control-lever position 46.5°, after switch-over point (of starting curve) control-rod travel deduction must be greater than 0.2 mm.

4 Checking pnuematic shutoff box

   Control lever at idle stop.
   At n = 290 min^{-1} and pu = 450 mbar, control rod must readily go to a travel of 0 mm.

5. Overflow valve 1 469 990 351

6. Port closing (difference) between greatest/smallest value 1° camshaft maximum

7. FBG setting

   FBG setting and blocking per mean port closing value of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft after cyl. 1.

8. Checking ELR control magnet

   - Control lever at idle stop
     At n = 315 1/min, I = 1.8 A, Control-rod travel = (12.6-14.0 mm, fuel delivery (32.0-40.0) ccm/1000 strokes.

     Note:
     If the fuel delivery measured is higher than 2.0 ccm/1000 strokes outside of inspection tolerance, replace control magnet.

   - Control lever at full-load stop
     At n = 2950 1/min, I = 3 A (short duration), control-rod travel = 0-1.0 mm

     Start check:
     At n = 100 1/min, I = 1.8 A, fuel delivery min. 55.0 ccm/1000 strokes.

9. Intermediate control curve (control-lever position) inspection

   Control lever 30°, n = 1000 1/min, control-rod travel = 6.8-7.5 mm

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 g
7. Edition
En

PES 6 MW 100/320 RS 1004
RQV 300 ... 1400 MW 6 R
Komb.-Nr. 0 403 446 104
1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300 ± 0,50 (0,75)

supersedes 9.82
company Volvo
engine TD 60 B

Tesoil-ISO 41 1/3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,6+0,2	8,35 - 8,55	0,35(0,6)			
300	5,2-5,4	0,95-1,35	0,35(0,55)			
1400	10,6+0,2		0,5 (0,7)			
500	9,3+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0,0-1,0				12	100 300 420-480	mind.7,0 5,2-5,4 = 2,0	300 500	1,3-1,4 2,8
ca. 64	10,7 4,0	1440-1450 1550-1580				(3a)			1450	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,67 bar 83,5-85,5 (81,5-87,5)	1440-1450*	LDA 1400 LDA 500	0,67 bar 85,0-89,0 (83,0-91,0) 0 bar 48,0-50,0 46,0-52,0)	100 300	120,0-130,0 (117,0-133,0) 9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
Ppe. RS 1004 mit MW 6 R	0,21	0,27 0 0,67	9,7-9,8 10,2-10,5 9,3-9,4 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 n

En 5. Edition

PES 6 MW 100/320 RS 1004 Z
RQV 300 ... 1400 MW 22
0 403 446 110

supersedes 5.82
company: Volvo
engine: TD 60 B

Test-No. 4118

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,7+0,1	8,35-8,55	0,35(0.6)			
300 1000	4,8-5,0 9,5-9,6	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0,0-1,0				ca.11	100 300	min.6,5 4,8-5,0		
ca.60	9,6 4,0	1140-1450 1565-1595				320-460 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,50 bar 83,5-85,5 (81,5-87,5)	1440-1450*	LDA 1000	0 bar 72,0-74,0 (70,0-76,0)	100 300	120,0-150,0 (117,0-153,0) 9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.88

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

VOL 6,0n

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1004 Z with MW 22	0,19	0,25 0 0,50	9,9-10,0 10,3-10,6 9,5-9,6 10,7-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En C10

Test Specifications Fuel Injection Pumps (1A) and Governors

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004-1
RSV 325-1400 MW 2/308
0 403 476 017

supersedes
company Volvo
engine TID 60 D
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,3-10,4	7,6-7,8	0,35 (0,6)			
325	4,4-4,6	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 20	325	4,0	350	10,9-11,0
							325	4,4-4,6	500	10,3-10,4
ca. 54 (2a)	1440-1450 = 9,3 1515-1545 = 4,0 1650=0,3-1,7						100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(1a) Idle stop: rev/min 8	Control rod travel mm 9
700	76,0-78,0 (74,0-80,0)		1000	82,0-86,0 (80,0-88,0)	100	120-130 (117-133)		
					325	9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10 .85

G11

6 AA

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 8,7j1

En 1. Edition

supersedes

Testoil-ISO 4113

PE 6 MW 100/720 RS 1007-1
RQ 300/1250 MW 12-1

company Daimler-Benz
engine O M 360 A
155 kW

0 403 546 004
1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,80-3,90 (3,75-3,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,2+0,1	9,95-10,15	0,35(0,6)			
300	6,9-7,1	1,35-1,75	0,35(0,55)			
750	11,2+0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,1-13,9	650	13,5	10,2	1295-1310	300	7,0	220	min.9,0		
	VH 46°			4,0	1395-1425			300	6,9-7,1		
1550	0,1-1,0							395-435	= 2,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	99,5-101,5 (97,5-103,5)	500	750	93,0-97,0 (91,0-99,0)	100	125,0-135,0 (122,0-138,0)
					300	13,5-17,5 (11,0-20,0)

Checking values in brackets

12.85

Testing

PES 6 MW 100/720 RS 1008
RQV 300 ... 1300 MW 13 DR
1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 -120-180-240-300 ± 0,5 (0,75)

supersedes 5.82
company: Fiat
engine 8360.05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) at 10,5 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,5+0,2	8,85-9,05	0,35(0,6)			
300	7,5-7,6	0,95-1,35	0,35(0,55)			
800	13,0+0,2		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300 1600	15,2-17,8 0,0-1,0	-	-	-	ca.14	100 300	min.9,5 7,5-7,6	300 740 1350	0,8-0,9 3,4 8,0
ca.60	11,6 4,0	1350-1360 1440-1470				380-485 (3a)				

Torque control travel a = 0,5 mm

Instructions
Test electrically unlocked starting delivery with 12 V.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	88,5-90,5 (86,5-92,5)	1350-1360*	800	86,5-90,5 (84,5-92,5)	100	135-145 (132-148)	900 1200	13,0+0,2 12,5+0,2
					300	9,5-13,5 (7,0-16,0)		
					100-220(80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 b

4. Edition

En

Test-ISO ...

PE 8 MW 100/720 LS 1010
RQ 300/1150 MW 17
Komb.-Nr. 0 403 548 001

supersedes 5.82
company KHD
engine BF 8 L 413 F
212 kW (288 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,2+0,1	13,1 - 13,3	0,35(0,6)			
300	6,3-6,5	1,2-1,6	0,35(0,55)			
500	9,9-10,0		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	18,2-20,8	650	19,0	9,2	1195-1210	300	6,4	100	min.7,8	1150	10,2-10,5
1400	VH = 46° 0,0-1,0			4,0	1240-1270			300	6,3-6,5	1050	11,2-11,4
								2,0	365-405	750	12,2-12,3

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,74 bar		LDA	0 bar	100	136,5-146,5
750	131,0-133,0		500	87,5-89,5		(133,5-149,5)
	(129,0-135,0)			(85,5-91,5)	300	12,5-16,5
						(10,0-19,0)

Checking values in brackets

12.85

G14

G14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel - diminution / difference mm (1)
LS 1010 MW 17	0,16	0,50 0,74 0	10,3-10,5 11,8-11,9 12,2-12,3 9,9-10,0

Notes

(1) when n rev/min and gauge pressure - bar (- maximum full-load control rod travel)

Test electrically unlocked starting delivery with 24 V.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 d
8. Edition
En

PE 8 MW 100/720 LS 1010
RQV 300-1150 MW 23
Komb.-Nr. 0 403 548 002

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 - 45 - 90 -135-180-225-270-315 ± 0,5 (0,75)

supersedes 8.83
company: KHD
engine: BF 8 L 413 F
212 kW (288 PS)
/ 2100 min^{-1}
206 kW
/ 2300 min^{-1}
(Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	13,6-13,8	0,35(0,6)			
300	6,3-6,5	1,25-1,65	0,35(0,55)			
500	10,2-10,8					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180 1400	15,2-17,8 0- 1,0				ca.18	100 300	min.8,0 6,3-6,5	300 500	1,4 3,2-3,8
									1200	8,5-8,6
ca.63	9,2 4,0	1160-1170 1235-1265				(3a)		430-490 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,8 bar 136,0-138,0 (134,0-140,0)	1160-1170*	LDA 500	0 bar 94,0-96,0 (92,0-98,0)	100	136,5-146,5 (133,5-149,5)	700 1050	12,5+0,1 11,2+0,1
					300	12,5-16,5 (10,0-19,0)	780 1150	12,5+0,1 10,2+0,3
					100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

G16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
LS 1010 MW 23	0,8	0,24 0,38 0	12,5-12,6 10,5-10,6 12,2-12,3 10,2-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 k
En 7. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016
RQV 300-1300 MW 25
Komb.-Nr. 0 403 446 123

supersedes 1.84
company: RVI
engine: MIDR 06.02-12
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,1+0,1	8,95-9,15	0,35(0,6)			
300	5,7-5,8	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Port closing mark cyl. 10,5 ° after port closing

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8					200	max.7,5		
	1650	0 -1,0				340-600	300	5,8-5,9		
ca.62	10,1	1370-1380				(3a)				
	3,9	1495-1525								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,67 bar	1355-1365*	LDA	0,67 bar	100	95,0-105,0		
1300	89,5-91,5		900	85,0-89,0		(90,0-110,0)		
	(87,5-93,5)			(83,0-91,0)	300	9,5-13,5		
			LDA	0 bar		(7,0-16,0)		
			500	56,0-58,0				
				(54,0-60,0)		100-230(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1016 mit MW 25	0,23	0,67 0 0,20	10,7-10,9 11,1-11,2 9,8-9,9 10,2-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 k 2

8. Edition

En

Test ①

PES 6 MW 100/320 RS 1016
RQV 300 - 1300 MW 25-1
Komb. 0 403 446 122
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 8.84
company RVI
engine MIDR 06.02-12
125 kW (170 PS)

*Start-of-delivery mark 8" after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5(0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑩ ⑫ 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0				ca.12	200 300	max.7,5 5,8-5,9		
ca.62	10,1 4,0	1455-1465 1575-1605				③a	490-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑫ intermediate speed ⑭ rev/min 3	Fuel delivery characteristics ⑤ high idle speed ⑤ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 59,0-61,0 (57,0-63,0)	100 300	91,5-93,5 (89,5-95,5) 9,5-13,5 (7,0-16,0) 100-230(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator RVI 8,8 k2

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1016 with MW 25-1	0,23	0,5 0,2 0	10,7-10,9 11,1-11,2 10,2-10,3 9,7- 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,0k5

1. Edition

En

Testoil-ISO 4113 (5)

PES 6 MW 100/320 RS 1016
RQV 300-1300 MW 25-5
0 403 446 165

supersedes –
company: RVI
engine: MIDR 06.02-12F
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,1+0,1	8,9-9,1	0,35(0,6)			
300	5,7-5,8	0,9-1,3	0,35(0,55)			
900	11,1+0,1					
500	9,9-10,0					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300 1650	15,2-17,8 0-1,0				ca.13	200 300	min.3,6 5,9-6,0		
ca.64	10,1 4,0	1370-1380 1495-1525				340-600 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1300	0,66 bar 89,5-91,5 (87,5-93,5)	1370-1380*	LDA 900 LDA 500	0,66 bar 86,5-90,5 (84,5-92,5) 0 bar 56,0-58,0 (54,0-60,0)	100 300 100-230	95,0-105,0 (92,0-108,0) 9,5-13,5 (7,0-16,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

G22

G22

D. Adjustment Test for Manifold Pressure Compensator

RVI 8,8k5

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1016 with MW 25-5	0,20	0,23 0 0,66	10,2-10,3 10,7-10,9 9,9-10,1 11,1-11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Start-of-delivery mark 8° after start of delivery

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 RVI 8,8 g

4. Edition

En

Test-No. 4 ...

PES 6 MW 100/320 RS 1016
RQ 750 MW 42

0 403 446 130
1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,50(0,75)

supersedes 10.84
company: RVI
engine: MIDR 06.02-12
100 kW (136 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,5±0,1	13,35-13,55	0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
				13,5 4,0 0-1,0	750-755 795-805 850						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	133,5-135,5 (131,5-137,5)				100	80,0-90,0 (77,0-93,0)

Checking values in brackets

12.85

324

PES 4 MW 100/320 RS 1102 RQV 300-1100 MW 39-5
0 403 444 107
1 - 3 - 4 - 2
0-90-180-270 ± 0,50 (0,75)

supersedes 4.85
company: Volvo
engine: D 45
85 kW

Testoil-ISO 411 (Y)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	11,1-11,3	0,35(0,6)			
300	6,4-6,5	1,3-1,7	0,35(0,55)			
1000	12,7+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150 1350	15,2-17,8 0-1,0				ca.14	300 100	6,4-6,5 min.8,0		
ca.48	11,7 4,0	1140-1150 1210-1240				320-450 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	111,0-113,0 (109,0-115,0)	1140-1150*	1000	112,0-116,0 (110,0-118,0)	100	130,0-140,0 (127,0-143,0)		
					300	13,0-17,0 (10,5-19,5)		
					100-220(80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

H1

HA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 d
En 3. Edition

PES 4 MW 100/320 RS 1102
RQV 300-1200 MW 39-2
0 403 444 104

supersedes 4.85
company: Volvo
engine: TD 45
82,5 kW (112 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW = 9,0 - 12,0 mm

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,2+0,1	10,0-10,2	0,35(0,6)			
300	6,5-6,6	1,3-1,7	0,35(0,55)			
1000	12,2+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200 1450	15,2-17,8 0-1,0				ca.12 (3a)	100 300	min.8,1 6,5-6,6		
ca.48	11,2 4,0	1240-1250 1290-1320					400-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
700	100,0-102,0 (98,0-104,0)	1240-1250*	1000	101,0-105,0 (99,0-107,0)	100	130,0-140,0 (127,0-143,0)		
					300	13,0-17,0 (10,5-19,5)		
					100-220 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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H2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 RVI 5,5 a

4. Edition

En

PES 6 MW 80/320 RS 1104
RSV 300-1450 MW 2/801

0 403 476 013

supersedes 7.84
company RVI
engine MD 060212
97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,70-1,90) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
900	10,4+0,1	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 4,0					ca.20	300	4,8	900	10,4-10,5
							250	max.6,4	1050	10,0-10,2
									1450	9,4-9,5
ca.58 (2a)	8,4 = 1515-1525 3,9 = 1540-1570 0-1,0 = 1650								1150	9,6-9,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	50,5-52,5 (49,5-53,5)	1515-1525*	1425	54,0-56,0 (52,0-58,0)	100	75-85 (70-90) RW = 15 mm		
					300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H3

H3

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 VOL 6,0 r 2

2. Edition

En

PES 6 MW 100/320 RS 1104
RSV 650-750 MW 4/311-2

0 403 476 018

supersedes 9.83
company Volvo
engine TD 60 DG 86 kW

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,1+0,1	9,05-9,25	0,35(0,6)			
650	4,5-4,6	1,7-2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.34	650	4,0		
	x = 3,0				650	4,5-4,6		
ca.40 (2a)	750-760 = 10,1				690-750 = 2,0			
	760-790 = 4,0							
	930 = 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	90,5-92,5 (88,5-94,5)				100	130-140 (127-143)		
					650	17,0-21,0 (15,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

H4

H4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7a12
2. Edition
En

PES 6 MW 100/720 RS 1101
ROV 300-1300 MW 34
0 403 446 124
1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300 + 0,50 (0,75)
Fuel injection test tubing 1 680 750 008

supersedes: MB 8,7m vom 8.85
company: Daimler-Benz
engine: OM 362 LA
141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,45-9,65	0,35(0,6)			
300	6,0-6,1	1,05-1,45	0,35(0,55)			
800	11,9+0,1		0,5 (0,7)			
500	10,2+0,1		0,35 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300 1600	15,2-17,8 0,1-1,0				ca.20 (3a)	100 300 460-520=2,0	min.7,6 6,0-6,1		
ca.61	10,9 4,0	1340-1360 1460-1490								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 94,5-96,5 (92,5-98,5)	1340-1350*	LDA 800 500	0,7 bar 89,5-93,5 (87,5-95,5) 54,5-56,5 (52,5-58,5)	100 300 100-230	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH
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D. Adjustment Test for Manifold Pressure Compensator

MB 5,7a 12

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1101 with RQV ..MW 34	0,1	0,12 0 0,70	10,4-10,5 10,9-11,1 10,2-10,3 11,9-12,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7a11
2. Edition
En

Test-Stand

PES 6 MW 100/720 RS 1101
RQV 300-1300 MW 44
0 403 446 134
1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300 ± 0,50 (0,75)
Fuel injection test tubing 1 680 750 008

supersedes MB 8,7 p
company: Daimler-Benz
engine OM 362 LA
141,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
300	11,9+0,1	9,35-9,55	0,35 (0,6)			
300	6,0-6,1	1,05-1,45	0,35 (0,5)			
800	11,9+0,1		0,50 (0,7)			
500	10,0+0,1		0,35 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1330 1600	15,2-17,8 0,1-1,0				ca. 11	100 300 520-580=2,0	min.7,6 6,0-6,1		
ca.64	10,9 4,0	1340-1350 1435-1465				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 93,5-95,5 (91,5-97,5)	1340-1350*	LDA 800 LDA 500	0,7 bar 87,5-89,5 (84,5-92,5) 0 bar 51,5-53,5 (49,5-55,5)	100 300 100-250 (80-250)	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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11.85

H7

D. Adjustment Test for Manifold Pressure Compensator

MB 5,7a 11

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1101 with RQV .. MW 44	0,1	0,12 0 0,7	10,4-10,5 10,9-11,1 10,0-10,1 11,9-12,0

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 8,8 g
2. Edition
En

PES 8 MW 100/720 RS 1110
RQV 500-1200 MW 29
0 403 448 120

supersedes 4.85
company: Perkins
engine TV 8.640 GR
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	13,8+0,1	9,9-10,1	0,35(0,6)			
500	7,3-7,4	0,95-1,35	0,35(0,55)			
800	13,8+0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200 1400	15,2-17,8 0,1-1,0	-	-	-	ca.15 (3a)	500 100	7,3-7,4 min.100		
ca.64	12,8 4,0	1220-1225 1255-1260								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1180	99,0-101,0 (97,0-103,0)		800	93,0-97,0 (91,0-99,0)	100	19,0-21,0 mm RW 90,0-100,0 (87,0-103,0)		
					500	9,5-13,5 (7,0-16,0)		
					100-400	(80-420)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 10,5 mm
... 120	15°

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 MW 100/720 RS 1114/RS1114-1
RQV 300-1300 MW 48
0 403 446 145
Fuel injection test tubing 1 680 750 008

supersedes –
company: Daimler-Benz
engine: OM 366 A
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,0+0,1	8,2-8,4	0,35 (0,6)			
300	7,8-7,9	1,0-1,4	0,35 (0,5)			
700	12,1+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1330	15,2-17,8				ca. 18	100	min. 9,4		
	1520	0-1,0					300	7,8-7,9		
ca. 52	10,0	1340-1350								
	4,0	1430-1460					330-600			
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	82,0-84,0 (80,0-86,0)	1340-1350*	700	83,0-85,0 (81,0-87,0)	100	19-21 mm RW	1300	11,0+0,1
						80,0-90,0 (77,0-93,0)	700	12,1+0,1
					300	10,0-14,0 (9,0-15,0)	720	12,1+0,1
					100-230	(80-250)	800	11,8+0,2
							900	11,4+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

H11

H44

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 MW 100/720 RS 1115
RQV 300-1300 MW 50
0 403 446 147
1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes

company: Daimler Benz
engine: OM 366 LA
148 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,3-9,5	0,35(0,6)			
300	5,6-5,7	1,05-1,45	0,35(0,55			
600	11,9+0,1		0,5(0,7)			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1340 1550	15,2-17,8 0-1,0				ca. 20	100 300	min.7,2 5,6-5,7		
ca. 54	10,9 4,0	1340-1350 1435-1465				(3a)	370-550			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 93,0-95,0 (91,0-97,0)	1340-1350*	LDA 600	0,7 bar 86,5-90,5 (84,5-92,5)	100	80,0-90,0 (77,0-93,0)		
					300	10,5-14,5 (8,0-17,0)		
			LDA 500	0 bar 57,0-59,0 (55,0-61,0)				
					100-200	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

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H12

H12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1115 with RQV..MW 50	0,18	0,21 0 0,70	10,8-10,9 11,4-11,7 10,1-10,2 11,9-12,0

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 K

En 2. Edition

supersedes 10.84

company: Volvo-BM

engine: TD 45-EM
85 kW

PES 4 MW 100/320 RS 1116
RQV 300-1100 MW 51
0 403 444 108
1-3-4-2
0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	11,6-11,8	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55)			
1000	12,5+0,1		0,55			
700	10,5+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑫ ⑫a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100 1350	15,2-17,8 0-1,0				ca.12	300 100	5,8-5,9 min.8,0		
ca.52	11,5 4,0	1140-1150 1200-1230				③a	330-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑫b intermediate speed ⑫a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,75 bar 116,0-118,0 (114,0-120,0)	1140-1150*	LDA 1000 LDA 700	0,75 bar 117,0-121,0 (114,5-123,5) 0 bar 79,0-81,0 (76,5-83,5)	100 300 100-220	150,0-160,0 (147,0-163,0) 13,0-17,0 (10,5-19,5) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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H14

D. Adjustment Test for Manifold Pressure Compensator

VOL 4,5k

Test at n = 700 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference, mm (1)
RS 1116 with MW 51	0,26	0,52 0 0,75	10,6-10,7 12,4-12,6 10,5-10,6 12,5-12,6

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

40

WPP 001/4 PEN 6,1i

1. Edition

En

Testoil ISO 4113

PES 6 MW 100/320 RS 1119
RQV 350-1050 MW 54-1

0 403 446 157

supersedes

company Volvo
engine: TD 61
111 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) 9-12 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	10,8-11,0	0,35 (0,6)			
300	6,3-6,4	1,6-2,0	0,35 (0,5)			
1000	12,3+0,1		0,35 (0,7)			
700	10,9+0,1					

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min / Control rod travel mm 2	Control rod travel mm / rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120 1280	15,2-17,8 0,1-1,0				ca. 16	350 100	6,3-6,4 min. 7,8		
ca. 45	11,0 4,0	1090-1100 1150-1180				(3a)	370-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b), intermediate speed (4a): rev/min 3	Fuel-delivery characteristics (5a), high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery, idle, switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 108,0-110,0 (106,0-112,0)	1090-1100*	LDA 1000	0,7 bar 109,0-113,0 (107,0-115,0)	100	19-21 RW 140-160 (137-163)		
			LDA 700	0 bar 82,0-84,0 (80,0-86,0)	300	16,0-20,0 (14,0-22,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

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BOSCH

H16

D. Adjustment Test for Manifold Pressure Compensator

PEN 6,1 i

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference, mm (1)
RS 1119 with MW 54-1	0,30	0,45 0 0,70	11,1-11,2 12,0-12,3 10,9-11,0 12,3-12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-2
RSV 325...1250 MW 0 A 308
0 403 476 032

supersedes

company Volvo-Penta

engine TD 61 AW
132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,1-3,2 (3,05-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8-10,9	8,45-8,65	0,35(0,6)			
325	6,1-6,2	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 22	325	5,5-5,6		
					325	6,0-6,1		
ca. 49 (2a)	1290-1300 = 9,8 1340-1370 = 4,0 1450 = 0,3-1,7				100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	84,5-86,5 (83,5-89,5)				100	160,0-180,0 (157,0-183,0)		
					325	12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,0 d
1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-2
RSV 325-1250 MW 2A 308
0 403 476 033

supersedes_
company Volvo-Penta
engine TD 61 APP
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8-10,9	8,5-8,7	0,35 (0,6)			
325	6,1-6,2	1,2-1,6	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0								
ca.22 (2a)	1290-1300 = 9,8 1340-1370 = 4,0 1450=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	85,0-87,0 (83,0-89,0)				100	160,0-180,0 (157,0-183,0)		
					325	12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,1 c

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-2
RSV 300-1050 MW 4 A 308-2
0 403 476 031

supersedes
company Volvo-Penta
engine TD 61 ACE 112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8-10,9	8,5-8,7	0,35 (0,6)			
300	6,1-6,2	1,2-1,6	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 25	300	5,6-5,7		
							300	6,1-6,2		
							100	min. 19		
ca.61 (2a)	1090-1100 = 9,8 1140-1170 = 4,0 1250 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	85,0-87,0 (83,0-89,0)				100	160,0-180,0 (157,0-183,0)		
					300	12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

H20

H20

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 1/4 PEN 6,1 b

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-2
RSV 650-750 MW 4 / 311-1
0 403 476 034

supersedes

company Volvo-Penta
engine TD 61 G
83 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5-11,6	8,9-9,1	0,35(0,6)			
650	6,1-6,2	1,7-2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 34	650	5,6-5,7	350	12,0-12,1
									500	11,5-11,6
							100	min. 19		
ca.40 (2a)	750-760 = 10,5 765-795 = 4,0 950 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	89,0-91,0 (87,0-93,0)				100	160,0-180,0 (157,0-183,0)		
					650	17,0-21,0 (15,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

Tested on

PES 6 MW 100/320 RS 1119-2
RSV 650-750 MW 4/311-2
0 403 476 035

supersedes–
company Volvo-Penta
engine TID 61 AG
102 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0-12,1	9,3-9,5	0,35(0,6)			
650	6,2-6,3	1,7-2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0					ca. 24	650	6,2-6,3		
ca.41,5 (2a)	750-760 = 11,0 765-795 = 4,0 950 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery charactenstics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	93,0-95,0 (91,0-97,0)				100	160,0-180,0 (157,0-183,0)		
					650	17,0-21,0 (15,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H22

H22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,1p1

1. Edition

En

Test data

PES 6 MW 100/320 RS 1119-2
RSV 325-1400 MW 2 A 314-1
0 403 476 038

supersedes
company Volvo-Penta
engine TD 61 A
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,7-8,9	0,35 (0,6)			
325	6,0-6,1	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 17	325	5,5-5,6		
							325	6,0-6,1		
ca. 51 (2a)	1440-1450=10,0 1505-1535= 4,0 1600=0,3-1,7						100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0 bar	100	140-160		
1000	87,0-89,0		500	49,0-51,0		(137-163)		
	(85,0-91,0)			(47,0-53,0)				
					325	12,0-16,0		
						(9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

H23

H23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 119-2 with MW 2 A 314-1	0	0,9 0,22 0,33	9,4-9,5 10,9-11,0 9,6-9,7 9,8-9,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 6,0 d 1

1. Edition

En

Test-No. 4

PES 6 MW 100/720 RS 1124
RSV 350-1300 MW 1 A 316
0 403 476 027
1-5-3-6-2-4 je 60°

supersedes
company Daimler-Benz
engine OM 366 A
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,7-10,8	8,0-8,2	0,35(0,6			
350	7,2-7,4	0,8-1,2	0,35(0,5			
700			0,5 (0,7			

Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.16	350	7,3	970	10,8-10,9
	x = 4,0				350	7,2-7,4	850	11,7-11,9
ca. 58	1340-1350 = 9,7				445-505	2,0	750	12,3-12,4
(2a)	1355-1385 = 4,0							
	(1400-1430 = 4,0)							
	1450=0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	80,0-82,0 (78,0-84,0)		700	80,0-82,0 (78,0-84,0)	100	80,0-90,0 (77,0-93,0)		0,5-1,0 mm before stop
			825	80,5-82,5 (77,5-85,5)	350	8,0-12,0 (7,0-14,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

J1

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 6,0 d

1. Edition

En

Test-ISO 4113

PES 6 MW 100/720 RS 1124
RSV 350-1200 MW 1 A 316-1
0 403 476 029

1-5-3-6-2-4 je 60°

supersedes
company Daimler-Benz
engine OM 366 A
110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,8-9,9	7,6-7,8	0,35(0,6)			
350	6,8-6,9	1,0-1,4	0,35(0,5)			
700	10,4-10,5		0,5 (0,7)			
900	10,1-10,3					
Fuel injection test		tubing 1 680 750 008				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.16	350	6,8-6,9	1150	9,8-9,9
	x = 4,0						750	10,8-10,9
					445-505	2,0	950	10,4-10,6
ca. 56 (2a)	1240-1250 = 8,8 1255-1285 = 4,0 (1300-1330 = 4,0) 1360=0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	76,0-78,0 (74,0-80,0)		700	72,0-74,0 (70,0-76,0)	100	80,0-90,0 (77,0-93,0)		0,5-1,0 mm before stop
			900	76,0-78,0 (73,0-81,0)	350	10,0-14,0 (9,0-15,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

J2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4, MB 5,7 a 13
1. Edition
En

PES 6 MW 100/720 RS 1125-1
RSV 600-1300 MW 0A 320
0 403 476 049
1-5-3-6-2-4 je 60°
Fuel injection test tubing 1 680 750 008

supersedes_
company Daimler-Benz
engine OM 362 LA
134 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1280	11,8-11,9	9,2-9,4	0,35(0,6)			
600	5,6- 5,7	1,0-1,4	0,35(0,5)			
800	11,8-11,9		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.16	600	5,6-5,7		
ca.59					100	min. 19		
(2a)	1330-1340=10,8 1400-1430= 4,0 1560= 0,3- 1,7							

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1280	92,0-94,0 (90,0-96,0)		800	91,0-95,0 (89,0-97,0)	100	80,0-90,0 (77,0-93,0)		
					600	10,0-14,0 (8,0-16,0)		

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

J3

J3

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB [illegible]
1. Edition
En

Testoil-ISO 4113

PE 6 MW 100/720 RS 1126
RQ 300/1250 MW 12-1
0 403 546 006

1-5-3-6-2-4 je 60°

supersedes –
company Daimler-Benz
engine OM 360 A
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,80-3,90 (3,75-3,95) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,4+0,1	9,95-10,15	0,35(0,6			
300	8,3-8,4	1,35-1,75	0,35(0,55)			
750	12,4+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13,1-13,9 VH 46°	650	13,5	11,4 4,0 0-1	1295-1310 1395-1425 1550			300 220 395-4	8,3-8,4 min.10,4 35 = 2,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	99,5-101,5 (97,5-103,5)	500	750	93,0-97,0 (91,0-99,0)	100	125,0-135,0 (122,0-138,0)
					300	13,5-17,5 (11,0-20,0)

Checking values in brackets

11.85

J4

Test Specifications Fuel Injection Pumps ① and Governors

Test data

PES 4 MW 100/720 RS 1127
RQV 300-1300 MW 48-1
0 403 444 110
1-3-4-2
0-90-180-270 ± 0,50 (0,75)

supersedes -
company Daimler-Benz
engine OM 364 A
85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,1	8,3-8,5	0,35 (0,6			
300	7,9-8,0	1,0-1,4	0,35 (0,5			
750	12,0+0,2		0,5 (0,7			
600	12,5+0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1330	15,2-17,8				ca. 21	100	min. 9,5		
	1550	0 - 1,0					300	7,9-8,0		
ca. 54	10,7	1340-1350								
	4,0	1440-1470				(3a)	330-600			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9	
1300	83,0-85,0 (81,0-87,0)	1340-1350 *	750	80,5-83,5 (78,0-86,0)	100	80,0-90,0 (77,0-93,0)	1300	11,7+0,1	1
			600	82,0-84,0 (80,0-86,0)			600	12,5+0,1	1
					300	10,0-14,0 (8,0-16,0)	750	12,5+0,3	3
							950	11,7+0,2	2
					100-230	(80-250)	620	12,5+0,1	1

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

J5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 6,0 d 7

En

1. Edition

supersedes –

PES 6 MW 100/720 RS 1130
RSV 300-1150 MW0A 318
0 403 476 037
1-5-3-6-2-4 je 60°

company Daimler Benz
engine OM 366 A
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel (2) mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1280	11,0-11,2	8,2-8,4	0,35 (0,6)			
300	6,9-7,0	1,0-1,4	0,35 (0,5)			
750			0,5 (0,7)			
Fuel injection test tubing 1 680 750 008						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 29	300	6,9-7,0	1280	11,0-11,2
							100	min. 19	750	11,7-11,8
									825	11,4-11,6
ca. 59 (2a)	1320-1330 = 10,0 1380-1410 = 4,0 1560 = 0,3-1,7									

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1280	82,0-84,0 (80,0-86,0)		750	80,0-82,0 (77,0-85,0)	100	80,0-90,0 (77,0-93,0)		
					300	10,0-14,0 (8,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH

Testoil-ISO

PES 6 MW 100/720 RS 1131
RQV 300-1300 MW 67
0 403 446 168

1-5-3-6-2-4 je 60°
Fuel injection test tubing 1 680 750 008

supersedes –
company: Daimler-Benz
engine: OM 366 LA
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,3-9,5	0,35(0,6)			
300	6,1-6,2	1,0-1,4	0,35(0,55)			
600	11,9+0,1		0,5 (0,7)			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1340 1550	15,2-17,8 0,0-1,0				ca. 15	100 300	min.7,6 6,1-6,2		
ca. 52	10,9 4,0	1340-1350 1440-1470				350-550 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 93,0-95,0 (91,0-97,0)	1340-1350*	LDA 600	0,7 bar 85,0-89,0 (83,0-91,0)	100	80,0-90,0 (77,0-93,0)		
					300	10,0-14,0 (7,5-16,5)		
			LDA 500	0 bar 52,0-54,0 (50,0-56,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

MB 6,0 d 11

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1131 with MW 67	0,37	0,47 0 0,70	10,5-10,6 11,4-11,7 10,1-10,2 11,9-12,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 6,1m
1. Edition
En

PES 6 MW 100/320 RS 1132
RSV 300-1050 MW 4 A 308-2
0 403 476 043

supersedes –
company Volvo-Penta
engine TD 61 ACE
112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	10,8+0,1	8,5-8,7	0,35 (0,6)			
300	6,1-6,2	1,2-1,6	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 29	300	5,6-5,7		
							300	6,1-6,2		
ca. 69 (2a)	1090-1100 = 9,8 1140-1170 = 4,0 1250 = 0,3-1,7						100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	85,0-87,0 (83,0-89,0)				100	140-160 (137-143)		
					300	12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

J9

J8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,1p

1. Edition

En

Test-No.

PES 6 MW 100/320 RS 1132
RSV 325-1400 MW 2 A 314-1
0 403 476 046
1-5-3-6-2-4 je 60 °

supersedes
company Volvo-Penta
engine TD 61 A
147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,7-8,9	0,35 (0,6)			
325	6,0-6,1	1,2-1,6	0,35(0,55)			
500	9,5-9,6					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.22	325	5,5- 5,6		
							325	6,0-6,1		
ca.58 (2a)	1440-1450 = 10,0 1530-1550 = 4,0 1650 = 0,3-1,7						100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0 bar	100	140-160		
1000	87,0-89,0		500	50,0-52,0		(137-163)		
	(85,0-91,0)			(48,0-54,0)	325	12,0-16,0*		
						(9,5-18,5)*		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J10

JAO

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1132 with MW 2 A 314-1	0	0,22 0,32 0,90	9,5-9,6 9,7-9,8 9,9-10,0 10,9-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 PEN 6,1 o

1. Edition

En

Testoil ISO

PES 6 MW 100/320 RS 1132
RSV 325-1250 MW 2 A 314-2
0 403 476 039
1-5-3-6-2-4 je 60°

supersedes
company Volvo Penta
engine TD 61 AW
132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW 9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	9,5-9,7	0,35(0,6)			
325	5,6-5,7	1,2-1,6	0,35(0,55)			
700	9,8-9,8					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 20	325	5,1-5,2		
							325	5,6-5,7		
ca. 50 (2a)	1290-1300 = 10,3 1360-1390 = 4,0 1450 = 0,3-1,7						100	min. 19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0 bar	100	140-160		
700	95,0-97,0		700	68,5-70,5		(137-163)		
	(93,0-99,0)			(66,5-72,5)	325	12,0-16,0		
						(9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

J12

J12

D. Adjustment Test for Manifold Pressure Compensator

PEN 6,1 0

Test at n = 700 rev/min decreasing / increasing pressure - in bar gauge pressure

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1) .
RS 1132 with MW 2 A 314-2	0	0,42 0,30 0,70	9,8-9,9 11,1-11,2 10,2-10,3 11,3-11,4

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,11

En 1. Edition

PES 6 MW 100/320 RS 1135
RSV 325-1250 MW 2 A 308-3
0 403 476 048

supersedes –
company Volvo-Penta
engine TD 61 AW
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,0+0,1	8,5-8,7	0,35 (0,6)			
325	8,7-8,8	1,7-2,1	0,35 (0,55)			
1000	11,0+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 24	325	8,7-8,8		
					100	min. 19		
ca. 52 (2a)	1290-1300 = 10,0 1340-1370 = 4,0 1450 = 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
800	85,0-87,0 (83,0-89,0)		100	87,5-91,5 (85,5-93,5)	100	150-160 (147-163)		
					325	17,0-21,0 (15,0-24,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

J14

JA4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PEN 6,1p3
En 1. Edition

PES 6 MW 100/320 RS 1136
RQV 350-1100 MW 54-2
0 403 446 167

supersedes
company Volvo
engine TD 61
111 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	10,8-11,0	0,35(0,6)			
300	6,3-6,4	1,6-2,0	0,35(0,5)			
1000	12,3+0,1		0,35(0,7)			
700	10,9+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	Upper rated speed: rev/min Control rod travel mm 2	Upper rated speed: Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	Intermediate rated speed: rev/min 5	Intermediate rated speed: Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	Lower rated speed: rev/min 8	Lower rated speed: Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	Sliding sleeve travel (1): mm 11
max.	1150 1350	15,2-17,8 0-1,0				ca.16	100 350	min.7,8 6,3-6,4		
ca.48	11,0 4,0	1140-1150 1200-1230				370-450 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	Full-load delivery: cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	Fuel delivery: cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	Starting fuel delivery: cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Torque-control travel: Control rod travel mm 9
LDA 700	0,7 bar 108,0-110,0 (106,0-112,0)	1140-1150*	LDA 1000	0,7 bar 109,0-113,0 (107,0-115,0)	100 300	140-160 (137-163) 16,0-20,0 (14,0-22,0)		
			LDA 700	0bar 82,0-84,0 (80,0-86,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

J15

D. Adjustment Test for Manifold Pressure Compensator

PEN 6,1p3

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1136 with MW 54-2	0,3	0,45 0 0,70	11,1-11,2 12,0-12,3 10,9-11,0 12,3-12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 13,8 u

1. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 720 RS 167 RSV 350-1000 P 1/378 R

Komb.-Nr. 9 400 097 200

supersedes -

company Fiat

engine 8210.02

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)cyl. 1

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	16,6-16,8	0,5 (0,9)			
350	6,9-7,1	1,5-2,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	350	6,5	1000	10,8-10,9
	x = 4,5								500	10,8-11,0
							100	min.19,0	400	11,2-11,4
ca.53 (2a)	9,8	1040-1050					350	6,9-7,1		
	4,0	1080-1110					390-450	= 2,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	166,0-168,0 (163,0-171,0)	1040-1050*	500	127,5-133,5 (124,5-136,5)	100	270,0-290,0 (266,0-294,0)	-	-
					350	15,0-21,0 (10,0-24,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

J17

Testoil-ISO 4113

PES 6P 100A 820LS 264 RQ300/1100 PA 327R (1)
RQ 300/1100 PAV 15287 (3)
LS 264 Z RQ 300/1100 PA 327 R (2)

supersedes 10.83
company Daimler-Benz
engine OM 407 h
132,4kW (180PS) (1 u. *)
154,5kW (210PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2-11,3	9,0 - 9,2	0,3(0,6)	12,7-12,8	10,9 - 11,1	
300	7,5-7,7	0,7 - 1,3	0,3(0,5)	7,5-7,7	0,8 - 1,2	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ - 327R (1)

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	13,8-14,6	500	14,0	10,2	1145-1160	300	7,6	100	min.9,6	-	-
				4,0	1200-1230			300	7,5-7,7		
				1350	0 - 1,0			370-410	= 2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1100	90,0 - 92,0 (88,0 - 94,0)	500	-	-	100	135,0-155,0 (131,0-159,0)

Checking values in brackets

7.85

B. Governor Settings

264 Z + RQ - 327R (2) MB 11,0 b - 2 -

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	13,8-14,6	500	14,0	11,7 4,0 1350	1145-1160 1200-1230 0 - 1,0	300	7,6	100 300 400-	min.10,1 8,5-8,7 430 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7
1100	109,0 - 111,0 (107,0 - 113,0)	500	-	-	100	135,0 - 155,0 (131,0-159,0)

Checking values in brackets

B. Governor Settings

..264 mit RQ..PAV 15287 (3)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	ev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	13,0-14,0	600	13,5	10,2 4,0	1145-1160 1215-1245	300	7,5	100 300 370-4	min. 9,0 7,4-7,6 10=2,0mm		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/100 strokes
1	2	3	4	5	6	7
1100	90,0 - 92,0 (88,0 - 94,0)	500	-	-	100	135,0 - 155,0 (131,0-159,0)

Checking values in brackets

En

J19

J43

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DEE 7,6 a 3

1. Edition

En

PES 6 P 110 A 720 RS 361 RSV 600-1150 P 2/480

Komb.-Nr. 9 400 231 076

supersedes -
company John Deere
engine 6466 A
170,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85 (2,70-2,90) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	16,3-16,5	0,4(0,75)			
600	5,4-5,6	2,2-2,8	0,4(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	600	5,0	1100	11,9-12,1
	x =						600	5,4-5,6	950	12,0-12,4
ca. 46	11,0	1145-1155					730-790	=2,0	850	12,3-12,4
(2a)	4,0	1220-1250								
	1380	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	162,5-164,5 (159,5-167,5)	1145-1155*	850	170,0-176,0 (168,0-178,0)	100	160,0-180,0 at control-rod = 20,0-21,0 mm	0 -	-
					1200	55,0-65,0 (53,0-67,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

J20

J&O

PE 6 P 120 A 320 RS 372-1 Y RQ 250/1100 PA 417 R
Komb.-Nr. 0 401 846 473
Values only apply to test nozzle-and-holder assembly 019 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5.85
company: DAF
engine: DKX 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-il-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,4-18,6	0,5(0,90)			
250	6,5-6,7	1,4-2,0	0,8(1,2)			
Port closing difference = 0,9-1,0 mm between control-rod travel 9 mm and control-rod travel 21 mm						

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,4 4,0 1350	1135-1150 1200-1230 max. 1,0	250	6,6	100 250 455-495	min.7,4 6,5-6,7 = 2,0	850 1100	11,4-11,5 11,3-11,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1135-1150 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,7 bar 183,5-185,5 (180,5-188,5)	-	LDA 600	0, bar 135,5-137,5 (132,5-140,5)	100	315,0-355,0 (311,0-359,0) = 19,5 - 21,0 mm RW

Checking values in brackets

11.85

J21

J21

D. Adjustment Test for Manifold Pressure Compensator DAF 11,6 i 7

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 372-1Y + RQ..PA 417 R	0,70	0 0,37 0,33	11,4-11,5 10,0-10,1 11,0-11,1 10,4-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J22

En J22

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DAF 11,6 k 2
5. Edition
En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R
Note VDT-I-420/114!
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5.84
company DAF
engine DKX 1160 243 kW
Komb.-Nr. 0 401 876 261

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,0	850	11,6-11,7
	x = 5,0								400	11,6-11,8
							250	6,4-6,6	300	11,9-12,4
ca. 54	10,4	1140-1150					670-730	= 2,0		
(2a)	4,0	1270-1300								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 183,5-185,5 (180,5-188,5)	1140-1150*	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm RW	250	6,5

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

J23

J23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J24

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 509

Komb.-Nrn. 0 402 046 208 = MAN-Nr. 2-7083
0 402 046 209 = MAN-Nr. 2-7066

supersedes 7.84
company: MAN
engine: D 2566 MK/MKF
206 kW/2200 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,8-18,2	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
				4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
VH = ca. 49°				1400	0-1,0					875	11,0-11,1
								350-390	=2,0		
										750	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 750	0,7 bar 178,0-182,0 (175,0-185,0)		LDA 650	0,7 bar 174,0-180,0	100	215,0-235,0
			LDA 500	0,31 bar 134,0-140,0	250	12,0-18,0
					100-170	(80-190)
LDA 1100	0,7 bar 163,0-169,0 (160,0-172,0)		LDA 500	0 bar 106,0-110,0		

Checking values in brackets

(Col.4-5 inrease by ± 3 cm³)

10.85

D. Adjustment Test for Manifold Pressure Compensator MAN 11,1 q 7

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 +RQ..PA 509	0,70		11,4-11,5
		0,43	10,9-11,1
		0,31	10,3-10,4
		0	9,2-9,3

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K2

En

K2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 v
3. Edition

En

PE6P110 A 320 RS 407-1 RSV 275-1000 P5/458-3
Komb.-Nr. 0 401 876 275

supersedes 7.84
company DAF
engine DKCL 1160
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	13,9-14,2	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 4,5	0,3-1,0	-	-	-	ca.23	275	6,6	600	12,5-12,6
							275	7,0-7,2	1000	11,1-11,3
ca.48	10,1	1040-1050					675-735 = 2,0		750	12,1-12,3
(2a)	4,0	1160-1190							850	11,4-11,7
	1325	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 600	0,7 bar 139,0-142,0 (136,5-144,5)	1040-1050*	LDA 1000	0,7 bar 114,5-119,5 (111,5-122,5)	100	245,0-265,0 (241,0-269,0)	0 -	-
			LDA 600	0 bar 136,5-139,5 (133,5-142,5)	275	9,0-14,0 (6,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

K3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 407-1	0,70		12,3-12,4
+RSV..P5/458-3		0	12,1-12,2
		0,28	12,2-12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K4

En
K4

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 v 4

1. Edition

En

PE 6 P 110 A 320 RS 407-1 RSV 275-1100 P 5 A 508-6
Komb.-Nr. 0 401 876 306

supersedes -
company DAF
engine DKTL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1-14,3	0,4(0,75)			
275	7,0-7,2	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.18	275	6,6	850	12,5-12,6
	X = 3,25						275	7,0-7,2	400	12,5-12,7
							675-745	= 2,0	300	12,8-13,3
ca.47 (2a)	11,3	1135-1145								
	4,0	1275-1305								
	1350	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1135-1145*	LDA	0 bar	100	245,0-285,0	-	-
850	141,0-143,0		600	137,0-139,0		(241,0-289,0)		
	(138,5-145,5)			(134,5-141,5)	275	10,0-15,0		
						(7,5-17,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

K5

K5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 6 P..RS 407-1 + RSV..P5 A 508-6	0,70	0 0,30	12,3-12,4 12,0-12,1 12,1-12,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K6

En K6

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MWM 14.4 a 1
2. Edition
En

PE 8 P 120 A 520/5 RS 427 RSUV 300-750 P 10 A 320
Komb.-Nr. 0 401 878 108
1- 8-5 -4 - 7 - 2 - 3 - 6
0-30-90-120-180-210-270-300 ° ± 0,5 ° (± 0,75 °)

supersedes 1.83
company MWM
engine D 234-V 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
750	9,7-9,8	15,9-16,1	0,5 (0,9)			
300	5,6-5,8	2,3-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	- - -	ca.21	300	6,1	750	9,7-9,8
	x = 2,75				300	6,5-6,7	450	9,7-9,8
ca. 55	8,7	790-800			320-380 = 2,0		320	10,9-11,5
(2a)	4,0	800-830						
	950	0,3-1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	159,0-161,0 (156,0-164,0)	790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

K7

K7

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4a1
3. Edition
En

PES 6P 120A 320 LS 429 RQ 250/1100 PA 659
Komb.-Nr. 0 402 046 264
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10,83
company: MAN
engine: D 2566 MKUL
235 kW/220 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,0+0,1	21,5-21,7	0,5(0,9)			
250	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	750	13,0-13,1
				4,0	1180-1210			250	6,3-6,5	1100	11,3-11,4
				1300	0-1,0			355-375	= 2,0	925	12,5-12,7
										1005	11,8-12,1

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA	1,0 bar	-	LDA	0,29 bar	100	205,0 - 225,0
750	215,0-217,0 (212,0-220,0)		500	134,0-140,0 (131,0-143,0)		(201,0-229)
1100	177,0-183,0) (174,0-186,0)		LDA	0 bar	250	12,0-18,0
650	206,0-212,0 (203,0-215,0)		500	111,0-113,0 (108,0-116,0)		(9,0-21,0)

Checking values in brackets

11.85

K8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel - diminution / difference mm (1)
PES 6P..LS 429 +Rq..PA 659	1,0		13,0-13,1
		0	9,7-9,8
		0,29	10,7-10,8
		0,58	12,4-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K9

Kg En

PES 5 P 110 A 820 LS 434 RQ 300/1100 PA 327-3

Komb.-Nr. 0 402 045 022

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

supersedes 5.84
company: Daimler-Benz
engine: OM 409
141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4+0,1	11,8-12,0	0,4(0,8)			
300	8,0-8,2	1,2-1,8	0,4(0,7)			
600	-	C, Sp. 4 u.5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	10,5 4,0	1145-1160 1175-1205	300	7,1	100 min. 300	10,8 8,0-8,2 375-415=2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1100	118,0-120,0 (115,0-123,0)	-	600	100,0-104,0 (97,0-107,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

.11.85

K10

Test Specifications Fuel Injection Pumps (1A) and Governors

PE 6 P 110 A 720 RS 441 RSV 250-1200 P 5/493

Komb.-Nr. 0 401 876 252

supersedes 7.84
company DAF
engine DHS 825
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4(0,75)			
250	5,0-5,2	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	4,6	400	12,4-12,5
	X = 5,0						250	5,0-5,2	300	12,6-13,1
							525-585=2,0			
ca. 52 (2a)	11,2	1240-1250								
	4,0	1330-1360								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 136,5-139,5 134,0-142,0)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) =19,5-21,0 mm RW	0 -	-
					250	7,0-12,0 (4,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

K11

KAA

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 II

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution difference mm (1)
PE 6 P..RS 441 + RSV..P 5/493	0,70	0 0,36 0,27	12,2-12,3 10,1-10,2 11,7-11,8 10,8-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K12

En K12

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 u 7

1. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P5 A 509
Komb.-Nr. 0 401 876 301

supersedes
company DAF
engine DHS 825
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 000	12,2+0,1	13,7-13,9	0,4(0,75)			
250	5,0-5,2	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-0,7		-	-	-	ca.24	250	4,6	1000	12,4-12,5
	X = 5,0						250	5,0-5,2	400	12,4-12,6
ca.58 (2a)	11,2	1240-1250					535-595	= 2,0	300	12,7-13,2
	4,0	1330-1360								
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 137,0-139,0 (134,5-141,5)	1240-1250*	LDA 600	0 bar 92,0-94,0 (89,5-96,5)	100	245,0-285,0 (241,0-289,0)	0 -	-
					250	7,0-12,0 (4,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 441 + RSV..P5 A 509	0,70	0 0,36 0,27	12,2-12,3 10,3-10,4 11,7-11,8 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K14

En
K14

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 u 2
3. Edition

En

PE 6 P 110 A 720 RS 441-1 RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

supersedes 7.84
company DAF
engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	14,3-14,6	0,4(0,75)			
250	4,8-5,0	0,9-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	x =	4,0					250	4,8-5,0		
ca. 45 (2a)	10,6	790-795					250-290	= 2,0 **		
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	142,5-145,5 (140,0-148,0)	790-795*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K15

KAS

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 11,4 L 3
5. Edition
En

PES 6 P 110 A 820 LS 442 RQV 300-1100 PA 594-3

Komb.-Nr. 0 402 046 233
0 402 046 301

supersedes 9.84
company: Daimler-Benz
engine: OM 407
162 kW (220 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Cyl. 6;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,9+0,1	11,3-11,5	0,4(0,8)			
300	8,0-8,2	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 32	100	min.9,7	250	1,0-1,3
							300	8,0-8,2	530	3,9-4,2
ca. 60	9,9	1140-1150								
	4,0	1175-1205				320-450			820	5,5-5,8
	1300	0-1,0							1100	8,1
						(3a)				

Torque control travel s = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	113,0-115,0 (110,0-118,0)	1140-1150*	600	90,0-94,0 (87,0-97,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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K16

K46

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 o
3. Edition
En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5/493
Komb.-Nr. 0 401 876 260 P5A493

supersedes 7.84
company DAF
engine DHT 825
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
250	5,3-5,5	0,8-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	250	4,9	400	11,6-11,7
	x =	5,0							300	11,8-12,3
							100	min. 7,0		
ca.58	10,4	1240-1250					250	5,3 - 5,5		
(2a)	4,0	1325-1355					540-600	= 2,0		
	1530	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	1240-1250*	LDA 600	0 bar 92,5-96,5 (90,0-99,0)	100	210,0-230,0 (206,0-234,0)	-	
					250	8,0-12,0 (5,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS447	0,32		11,1 - 11,2
+ RSV..P5/493		0,70	11,4 - 11,5
		0	10,4 - 10,5
		0,23	10,5 - 10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K18

En

K18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 7,0 i 2

1. Edition

En

PE 6 P 110 A 320 RS 465 RSV 200-1200 P 1 A 305

Komb.-Nr. 0 401 876 313

supersedes -

company Volvo-Penta

engine TD 61 G 150,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,6+0,1	13,4-13,6	0,4 (0,75)			2,4-2,6 (2,2-2,9)
200	5,4-5,6	1,6-2,2	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-0,7		-	-	-	ca.13	200	5,0	-	-
	x = 4,3						200	5,4-5,6		
ca.55 (2a)	11,6	1240-1250					280-340	= 2,0		
	4,0	1270-1300								
	1440	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F).		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	134,0-136,0 (131,0-139,0)	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

PES 6 P 120 A 720/3 LS 470-2 RQ 300/1100 PA 658-19
Komb.-Nr. 0 402 036 044
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: MAN
engine: D 2866 LFZ/330
243 kW/2200 min-1
MAN-Nr. 2-7712

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,3+0,1	20,7-20,9	0,5(0,9)			
300	4,6-4,8	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,5	1145-1160	300	4,7	100	min. 6,2	750	11,8-11,9
				4,0	1175-1205			300	4,6-4,8	1100	10,5-10,6
VH =	max. 46°			1300	0 - 1,0			340-380	= 2,0	875	11,6-11,8
										950	11,0-11,3

Torque-control travel on flyweight assembly dimension a = 0,50 mm

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	1,0 bar	-	LDA	0,38 bar	100	225,0-245,0
750	207,0-209,0 (204,0-212,0)		500	184,0-196,0 (181,0-199,0)		(221,0-249,0)
1100	199,0-203,0 (196,0-206,0)		LDA	0 bar		
650	206,0-212,0 (203,0-215,0)		500	132,0-134,0 (129,0-137,0)		

Checking values in brackets

12.85

K20

K20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS470-2 +RQ..PA 658-19	1,0	0	11,3-11,4
		0,16	8,9-9,1
		0,38	9,2-9,3
			10,5-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K21

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 e

1. Edition

En

PES 6 P 80 A 720 LS 478
Komb.-Nr. 9 400 087 350

RQV 350/840-900 PA 726-1

supersedes –
company: Caterpillar
engine: 3306 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	14,1+0,1	19,3-19,4	0,25(0,4)			
350	5,9-6,1	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	925	15,2-17,2	–	–	–	ca.11	100	min.8,0	350	0,5-1,5
ca.66	13,1	910-920					350	5,4-5,6	500 – 750	2,4-2,6
	4,0	940-970					500	2,4-3,6		
	1000	0-1,0					780-840	= 2,0	850	4,0-4,5
						③a			950	8,6

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
880	193,0-194,0 (191,5-195,5)	910-920 *	500	182,5-184,5 (180,5-186,5)	100	235,0-255,0 = 17,6-18,6 mm RW	–	–
					350	5,4-5,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

K22

K22

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 7,1 a

1. Edition

En

PE 6 P 110 A 320 RS 492 RSV 200-1200 P 1 A 305

Komb.-Nr. 0 401 876 312

supersedes
company Volvo-Penta
engine TJD 71 G
165,0 kW

Test No. 160 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	12,5-12,7	0,4 (0,75)			2,4-2,6 (2,2-2,9)
200	5,4-5,6	1,6-2,2	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.13	200	5,0	-	-
	x = 4,3						200	5,4-5,6		
ca.55 (2a)	11,1	1240-1250					280-340	= 2,0		
	4,0	1270-1300								
	1440	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	125,0-127,0 (122,0-130,0)	1240-1250*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K23

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 7,1 b

1. Edition

En

PE 6 P 110 A 329 RS 492 RSV 650-750 P 4/421

Komb.-Nr. 0 401 876 315

supersedes

company Volvo-Penta

engine TJD 71 G 127,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	12,6+0,1	13,4-13,6	0,4 (0,75)			2,4-2,6 (2,2-2,9)
650	4,9-5,1	1,6-2,0	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.33	650	6,1	-	-
	x = 2,7						650	6,0-6,2		
ca.39 (2a)	11,6	750-755					660-700=2,0			
	4,0	775-785								
	930	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5)	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	134,0-136,0 (131,0-139,0)	750-755*	-	-	-	-		-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

K24

K24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 d

6. Edition

En

PE 6 P 110 A 720 RS 3034 RQV 200-1200 PA 275 R

Komb.-Nr. 0 401 846 709

supersedes 3.84
company: Scania
engine: DS 804

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	11,1-11,3	0,5(0,7)			2,5±0,1
225	5,9-6,1	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min.7,4	150	0,6-0,8
							225	5,9-6,1	500	3,8-4,4
ca. 62	11,3	1240-1250							850	5,9-6,1
	4,0	1370-1400					410-470=2,0		1200	8,4
	1500	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 600	0,9 bar 111,0-113,0 (109,0-115,0)	1240-1250*	LDA 1200	0,9 bar 118,5-123,5 (117,0-125,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 81,0-85,0 (79,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator SCA 8,0 d

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3034 + RQV..PA 275 R	0,90	0 0,37 0,26	12,3-12,4 11,0-11,1 12,0-12,1 11,3-11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 18° v. OT
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DEE 7,6 g 1
2. Edition
En

PES 6 P 110 A 720 RS 3083-1 RSV 400-1100 P 2/489
P 2A489

Komb.-Nr. 9 400 231 084

supersedes 4.85
company John Deere
engine 6466 A
161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55 (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,7+0,1	13,8-14,0	0,4(0,75)			
425	5,1-5,3	1,1-1,6	0,45(0,75)			

Port closing mark cyl. 1 : 13° after port closing

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	425	4,7	1100	10,7-10,8
	x	=							700	11,9-12,2
							100	min.19,0		
							425	5,1-5,3		
ca. 49 (2a)	9,7	1155-1165					580-640	= 2,0		
	4,0	1200-1230								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,9 bar 137,5-139,5 (134,5-142,5)	1155-1165*	LDA 700	0,9 bar 154,0-160,0 (151,0-163,0)	100	150,0-170,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 103,0-109,0 (101,0-111,0)	1200	47,0-57,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

L3

L3

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 g 1

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..RS 3083-1 + RSV..P2/489 P2A489	0,37	0,20	11,3 - 11,4 10,1 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L4

L4

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 STE 9,7 c

1. Edition

En

PE 6 P 110 A 721 RS 3102 RSV 250-1200 P 1 A 516

Komb.-Nr. 0 401 866 700

supersedes –
company Steyr
engine WD 615.84
191,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) cyl. 1

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,7+0,1	15,4-15,7	0,4 (0,75			
250	7,0-7,2	1,7-2,2	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-0,7		-	-	-	ca.22	250	6,6	-	-
	x =						250	7,0-7,2		
ca.66 (2a)	11,7	1240-1250					490-550	= 2,0		
	4,0	1310-1340								
	1430	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 154,0-157,0 (151,5-159,5)	1240-1250*	LDA 700	0,7 bar 150,0-154,0 (147,0-157,0)	100	190,0-220,0	-	-
			LDA 700	0 bar 102,0-105,0 (99,5-107,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

L5

L5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3102 + RSV..P 1 A 516	0,7	0 0,47 0,30	12,7-12,8 10,2-10,3 12,1-12,2 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 10,0 f
2. Edition
En

PE 6 P 110 A 320 RS 3132 RSV 200-1100 P 1/421-1
Komb.-Nr. 0 401 876 738

supersedes 7.85
company Volvo-Penta
engine TID 100 K
225 kW

Test-oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0±0,1	17,6-17,8	0,4 (0,75)			2,5±0,1
200	4,2-4,4	1,7-2,1	0,3 (0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	250	3,8	-	-
	x = 4,0						250	4,2-4,4		
ca. 57 (2a)	11,6	1140-1150					245-305	= 2,0		
	4,0	1175-1205								
	1340	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	176,0-178,0 (173,0-181,0)	1140-1150*	-	-	-	-	-	-
					200	17,0-21,0 (14,5-23,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 18,3 c 1

1. Edition

En

PE 10 P 110 A 320 LS 3818-10 RQ 300/1150 PA 437-4
Komb.-Nr. 0 401 849 720

supersedes

company: Daimler-Benz
engine: OM 423
261 kW

1- 9- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	12,1-12,3	0,4(0,8)			
300	7,9-8,1	1,2-2,0	0,4(0,7)			
600 900	- Sect. C, Col. 4-5		0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,0	1190-1205	300	8,0	100	min.9,5	1150	11,0-11,1
				4,0	1225-1255			300	7,9-8,1	600	11,5-11,7
				1350	0-1,5			430-470	= 2,0	900	11,4-11,6

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1190-1205 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1150	121,0-123,0 (118,5-125,5)	-	600	107,0-111,0 (104,0-114,0)	100	140,0-160,0 (136,0-164,0)
			900	115,0-120,0 (112,0-123,0)		

Checking values in brackets

10.85

L8

Test Specifications Fuel Injection Pumps ① and Governors

PE 10 P 110 A 320 LS 3818-11 RQV 300-1150 PA 486-2

Komb.-Nr. 0 401 849 706

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes

company: Daimler-Benz
engine: OM 423
261 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 10 RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	12,6-12,8	0,4(0,8)			
300	8,5-8,7	1,4-2,2	0,4(0,7)			
600	-	C, Sp. 4+5	0,6(0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑯ ⑳ 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 18	100	min.10,2	300	1,6-1,8
ca. 52	11,2	1190-1200					300	8,5-8,7	800	5,8-6,2
	4,0	1235-1265					430-490 = 2,0		1200	8,2-8,4
	1400	0-1,0							1260	10,0
						③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑳ intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1150	126,0-128,0 (123,5-130,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,2+0,1
							600	12,5+0,1
			900	118,0-123,0 (115,0-126,0)			900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 e 3
1. Edition
En

PE 10 P 120 A 320 LS 3824-10 RQV 300-1150 PA 724-2
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes –
company: Daimler-Benz
engine: OM 423 LA
368 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 849 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,7+0,1	18,0 - 18,2	0,5 (0,8)			
300	5,0-5,2	1,6 - 2,2	0,8 (1,2)			
750	-	C, Sp. 4 u. 5	0,8 (1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 20	100	min. 6,3	300	1,0-1,2
ca. 54	10,7	1190-1200					300	4,8-5,0	500	4,0-4,5
	4,0	1245-1275							700	5,3-5,8
	1300	0 - 1,5				300-400 (3a)			1100	7,4-7,8
									1260	10,0

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200 *	LDA 750	0,7 bar 184,0-188,0 (181,0-191,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 138,0-140,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE10P..LS3824-10 + RQV..PA 724	0,70		11,7 - 11,8
		0	10,0 - 10,2
		0,39	10,4 - 10,6
		0,52	11,2 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 t

1. Edition

En

PE 12 P 120 A 520/4 LS 3828 RQV 250-1150 PA 668-7
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 840 725

supersedes -
company: MAN
engine: D 2842 LE
560 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2 - 4,3 (4,15-4,35) mm (from BDC) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.8,5	350	2,0-2,5
ca. 66	10,9	1190-1200					250	6,9-7,1	900	6,7-6,9
	4,0	1320-1350					400-460=2,0		1150	8,6
	1450	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	200,0-202,0 (197,0-205,0)	1190-1200*	-	-	100	190,0-210,0 (186,0-214,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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L12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d 2
En 1. Edition

Testoil-ISO 4113

PE 8 P 120 A 920/4 LS 7008 X RQV 200-950 PA 547-6
Komb.-Nr. 0 402 648 815
1-2-7-3-4-5-6-8 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes –
company: Saab-Scania
engine: DSC 14 02

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC) ; RW = 6,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1±0,1	18,7 - 18,9	0,7 (1,0)			3,3±0,1 (3,0-3,5)
225	4,5-4,7	1,4 - 1,8	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,1	990-1000					225	4,4-4,6	450	3,3-3,8
	4,0	1110-1140					310-370	=2,0	700	5,0-5,2
	1250	0 - 1,0							950	7,9
						③a				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 187,0-189,0 (184,0-192,0)	990-1000 *	LDA 950	0,9 bar 181,0-189,0 (179,0-191,0)	100	250,0-300,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)	225	4,4-4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE8P..LS 7008 X +RQV..PA 547-6	0,90	0 0,24	13,1 - 13,2 11,4 - 11,6 12,1 - 12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 3.5.1985
- Start of fuel delivery-engine: 22° v. OT
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 nm.

Test Specifications Fuel Injection Pumps ① and Governors

PE 8 P 120 A 920/4 LS 7108 RQV 200-950 PA 736
Komb.-Nr. 0 402 648 813
1-2-7-3-4-5-6-8 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes –
company: Scania
engine: DSC 14 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing ⑥ ⑦

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC) ; RW = 6,0-8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	20,1-20,3	0,7 (1,0)			3,3 ± 0,1
225	4,6-4,8	1,4-1,8	0,3 (0,6)			(3,0 - 3,5)
Port closing difference between control-rod travel 8 mm and max. 1,65-2,35° camshaft						

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 10 (3a)	100	min.5,9	150	0,6-0,8
ca. 60	13,2	990-1000					225	4,4-4,6	420	3,1-3,3
	4,0	1115-1145					310-370	=2,0	680	4,8-5,0
	1250	0-1,0							950	7,4

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000*	LDA 950	0,9 bar 194,0-202,0 (192,0-204,0)	100	250,0-300,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

L15

D. Adjustment Test for Manifold Pressure Compensator SCA 14,0 g

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 7108 + RQV..PA 736	0,90	0 0,35 0,24	14,2-14,3 11,5-11,6 13,6-13,7 12,0-12,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 3.5.1985
- Start of fuel delivery-engine: 22° v. OT
- Firing sequence, engine : 1-5-4-2-6-3-7-8

die

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps and Governors

(2) PP 001/4 MB 12,0 a

1. Edition

En

PES 6 P 120 A 720 LS 7114 RQ 300/950 PA 774
Komb.-Nr. 0 402 746 806

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Daimler-Benz
engine OM 447 LA
350,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) Cyl.6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) 6
600	13,9+0,1	22,7-22,9	0,5(0,9)			
300	6,1-6,3	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	13,1	995-1010	300	6,2	100	min. 7,8	950	14,1-14,3
VH =	max. 46°			4,0 1150	1065-1095 0-1,5			300 380-420	6,1-6,3 =2,0	850	14,7-14,9

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 945-960 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 600	0,85 bar 227,0-229,0 (224,0-232,0)	-	LDA 700	1,5 bar 243,0-247,0 (240,0-250,0)	100	230,0-250,0 (226,0-254,0)
LDA 950	1,5 bar 232,0-235,0 (229,0-238,0)		LDA 500	0 bar 135,0-137,0 (132,0-140,0)		

Checking values in brackets

1.86

L17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
· PES 6 P..LS 7114 + RQ..PA 774	0,85	0,25 0,50 0,98 1,10	13,9-14,1 10,6-10,8 12,7-12,9 13,6-13,8 13,2-13,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L18

En (19

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 STE 9,7 d
1. Edition
En

PE 6 P 120 A 720 RS 7118 RQ 300/1100 PA 784
Komb.-Nr. 0 402 646 830
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Steyr
engine: WD 615,68 222 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	18,1-18,3	0,5(0,9)			3,3 ± 0,1
300	4,5-4,7	1,5-2,1	0,8(1,2)			(3,0 - 3,5) **

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,7	1145-1160	300	4,6	100	min.6,0	-	-
VH =	ca. 46°			4,0	1205-1235			300	4,5-4,7		
				1300	0-1,0			360-400	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0,30 mm
Speed regulation: At 1145-1160 min⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	1,2 bar 181,0-183,0 (178,0-186,0)	-	LDA 700	1,2 bar 190,0-196,0 (187,0-199,0)	100	225,0-265,0
			LDA 700	0 bar 143,0-145,0 (140,0-148,0)		

Checking values in brackets

1.86

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

L19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 7118 + RQ..PA 784	1,20	0 0,57 0,36	12,7-12,8 10,3-10,4 12,1-12,2 10,8-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,7 c

1. Edition

En

PES 6 P 120 A 720 LS 7120 RSV 350-1100 POA 518

Komb.-Nr. 0 402 776 800

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company Daimler-Benz

engine OM 427 A 206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	13,2+0,1	19,6-19,8	0,5 (0,9)			
350	5,5-5,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	350	5,6		
	X = 3,5						350	5,5-5,7		
ca.52 (2a)	12,2	1130-1140						**		
	4,0	1200-1230								
	1350	0 - 1,7								

The numbers denote the sequence of the tests

** Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1080	0,75 bar 196,0-198,0 (193,0-201,0)	1130-1140 *	LDA 750	0,75 bar 199,0-203,0 (196,0-206,0)	100	170,0-190 (166,0-194)	0 - 0)	-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

L21

L2A

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 5 P..LS 7120 +RSV .. POA 518	0	0,10 0,20	11,2-11,4 11,8-12,0 12,6-12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 8 P 120 A 320 LS 7801 RQ 300/1050 PA 717
Komb.-Nr. 0 402 648 812
1-8-7-2-6-3-5-4 je 45 ° ± 0,5 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Daimler-Benz
engine: OM 442 LA
320 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 413

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5, 15-5,35) mm (from BDC) cyl.8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,8+0,2	21,3-21,6	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
850	-	C, Sp. 4 u. 5	0,8(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	14,5	1095-1110	300	6,3	100	min. 7,9	1050	15,5-15,7
				4,0	1160-1190			300	6,2-6,4	850	15,9-16,1
VH	= max. 46 °			1300	0 - 1,5			380-420	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0,90 mm

Speed regulation: At 1095-1110 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 600	0,68 bar 213,0-216,0 (210,0-219,0)	-	LDA 850	1,15 bar 244,0-248,0 (241,0-251,0)	100	200,0-220,0 (196,0-224,0)
LDA 1050	1,15 bar 232,0-234,0 (229,0-237,0)		LDA 500	0 bar 145,0-147,0 (142,0-150,0)		

Checking values in brackets

1.86

L23

L23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PE8P..LS 7801 +RQ.. PA 717	0,68		14,8-15,0
		0,31	12,2-12,4
		0,47	13,8-14,0
		0,82	15,1-15,2
		0,95	15,5-15,7
		1,10	16,0-16,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)